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Apiarist's Advocate

News, Views & Promotions – for Beekeepers – by Beekeepers

All Around Apiculture

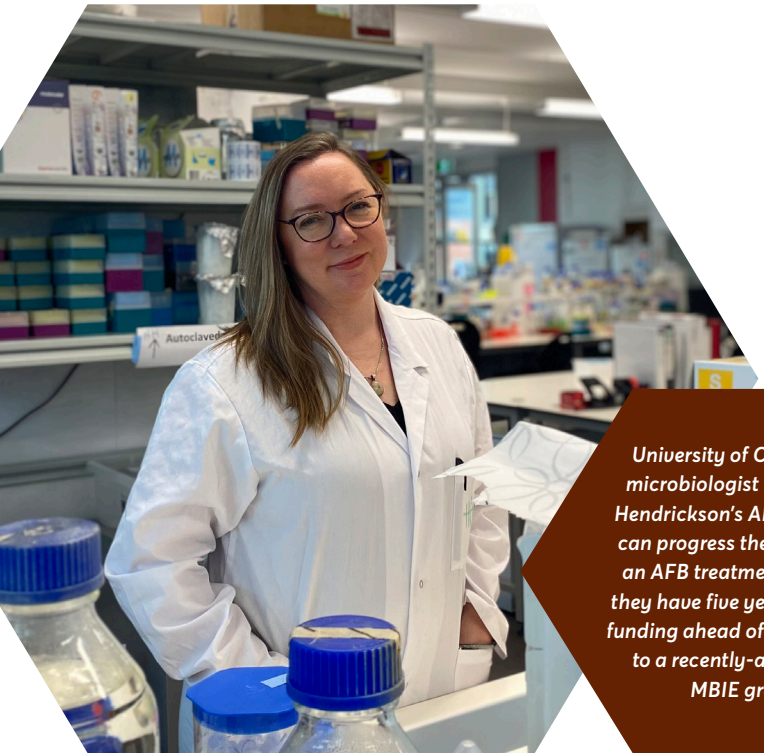
In the lab, AFB phage research scores a funding boost; In the field, a century-strong beekeeping business hits the market; And in Wellington, apiculture issues are laid out for the incoming government.

Millions in Funding Moves AFB 'Vaccine' a Step Closer

The potential of an American foulbrood (AFB) preventative treatment or 'vaccine' for New Zealand beehives got another big step closer recently, with Dr Heather Hendrickson's lab at the University of Canterbury (UC) awarded a share of almost $9 million to further their research into the use of bacteriophages to control AFB pathogens. What will it mean for the ABAtE (Active Bacteriophages for American Foulbrood Eradication) project? Who else will benefit? And when might beekeepers see a treatment available for their hives? We speak to Dr Hendrickson to find out.

Heather Hendrickson's summers just got a little more interesting. When most of the students go on summer break, the senior lecturer can often be found whiling away at the laborious task of compiling funding applications to keep the Hendrickson Lab operating. It's the dilemma of many a scientist in New Zealand – how to get others to see the value which they do in their projects, to a level where financial backing can make them a reality. Now, thanks to the Ministry of Business Innovation and Employment's (MBIE) Endeavour Fund, the ABAtE project is secure for another five years, at least.

"In the immediate future, this is going to be about 75 percent of the work that happens in our laboratory. This is going to be a lot. So, I probably will not have to write grant applications this summer. Which is nice," Hendrickson says with a chuckle.



University of Canterbury microbiologist Dr Heather Hendrickson's ABAtE project can progress their work into an AFB treatment knowing they have five years' worth of funding ahead of them thanks to a recently-announced MBIE grant.

It's a laugh born out of relief. Up until this point the ABAtE project, which began in the Hendrickson Lab at Massey University in Albany, Auckland, in 2018 but relocated to UC in Christchurch in 2022, has survived on piecemeal funding to keep it afloat, from the likes of the Honey Industry Trust, AGMARDT and the Ministry for Primary Industries 'SFFF' fund.

The Hendrickson Lab is not the sole recipient of the $8,946,240 though. It was gained in collaboration with Professor Peter Fineran at University of Otago who will seek to develop phage biocontrols for Psa in kiwifruit. Projects to tackle viruses effecting cherries and salmon farming are also in the five-year pipeline. While those four primary industries, including apiculture, are the benefactors of the research focus for now, the funding allows for the establishment of a "phage manufacturing bioindustry in Aotearoa New Zealand" according to a UC press release. It also points to a future where they are "ideally positioned to pivot towards emerging threats to food production, and even medically-relevant human pathogens".

Bacteriophages (aka phages) are the most numerous entity on the planet and the heroes of the work, or "nature's ninjas" as Hendrickson has long dubbed them. These tiny phages are viruses which attach themselves to bacteria before eliminating their host. Infection can produce 100s of copies of the phage, each of which is able to go on and repeat this process.

Bacteriophages are generally highly specific to the bacterial hosts they target. For this reason, much of the work of the ABAtE project thus far has focused on collecting phages from around New Zealand that were specific to the AFB pathogen paenibacillus larvae. Beekeepers were called on to submit soil samples from apiaries and beehive materials. With 100s of samples submitted thus far, PhD student Danielle Kok worked to identify the phages which target the strains of p. larvae known in New Zealand, and to formulate a cocktail of those phages. The funding will allow Kok to return to the lab in a post-doctoral role and continue formulation of the cocktail.

"Danielle's goal will primarily be to get these phages to the point where there are the perfect phages to put into cocktails, and we have a perfect,

Danielle Kok spent her PhD working on the ABAtE project and newly acquired funding means she will return to the Hendrickson Lab as a post-doctoral research fellow in 2024 to continue the search for an AFB 'vaccine'.

or as close as possible to a perfect, understanding of how they're going to work. That is, how the honeybee larvae are going to interact with the phages," Hendrickson explains.

"One of the big issues is going to be how do we grow large concentrations of pure phages so that we have enough to scale up and then making sure that they're stable once you put them out in the environment?"

Following that step, trials in both lab and field could take place. That is not likely to be until the later years of the five-year project though, with Fineran's Psa-targeting phages planned to be released to kiwifruit orchards first.

"What's nice about this platform is that whatever they learn from doing the scale up and field trials in the orchards, then we can apply to the apiculture phages as they come through and are ready for that step. It will speed things up."

It is hoped that a suitable location for a "natural" field trial might be found at the appropriate time, whereby beehives in proximity to known AFB cases can be treated and the results assessed. Alternately "blind" field trials could be used on a larger scale, where thousands of hives are treated and compared against the same amount which are untreated. The level of protection would then be assessed.

"We have partners who are willing to help us if we get to that point of huge field trials, but if we can do the natural experiment it will significantly decrease the amount of hives we need to work with in the first instances. There are a lot of questions we have about adding these phages to hives, such as if they remain otherwise healthy, if they keep making as much honey as they would otherwise, things that beekeepers are going to want to know. We now have this money so that we can do those tests and get this up to the point where we can keep our promises to the

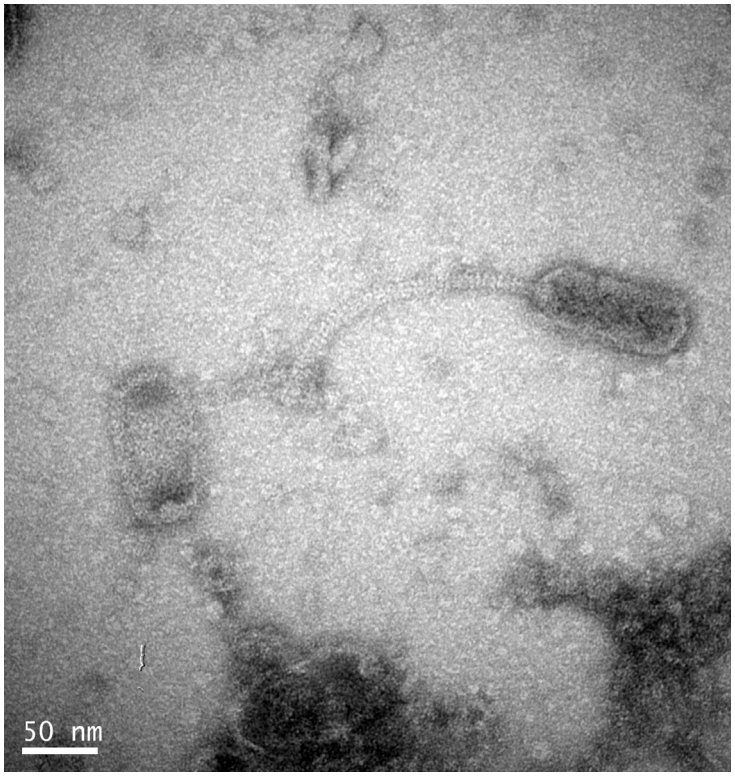
beekeepers and actually produce a cocktail that we know is safe and effective," Hendrickson says.

Those trials are years of work in the lab away though, and in the immediate afterglow of the funding boon, Hendrickson is just thankful to be able to extend work she believes has a good chance of bringing significant benefit to food production and even, potentially, the fight against medically-relevant human pathogens. Having seen her former employer, Massey University, hit troubled financial times and many former co-workers laid off recently, the MBIE funding is an even greater relief the microbiologist says.

"The whole university system is a little shaky at the moment and watching my former department fall over and not be supported by the university is very startling. I just feel very lucky in a lot of ways."

Its luck born out of years of graft though and she is motivated to make sure that continues at the lab, so that beekeepers have every chance to see the benefit. Whenever that might be.

"The thing that really grounded me after finding out that we got the funding is, we started talking to the beekeepers four or five years ago and they were so willing to send us samples, and to make sure that we have what we needed. It's such a welcoming community and it's been such a great space to start working in," Hendrickson says, adding "This money allows us to keep our promises to the beekeepers, and to make good on all of the help that they've given us to get to this point".



A bacteriophage as seen through a transmission electron micrograph. This phage targets paenibacillus larvae and was discovered by the ABAtE team.

A Beginners Guide to Phage Research

BY DAVE BLACK

The ABAtE (Active Bacteriophages for American FoulBrood Eradication) project born at Massey University has gone from strength to strength at University of Canterbury, now part of a funded five-year programme to harness bacteriophages and create a new bioindustry serving primary industries in New Zealand. This ambitious project still has apiculture, and American Foulbrood (AFB) control, at its heart. Here we look at what bacteriophages are, what they can do, and what's involved in making them a practical and sustainable option for disease control.

MEET THE BACTERIOPHAGE

'Phage' is a colloquial contraction of 'bacteriophage', literally, a devourer (eater) of bacteria. Beekeepers are not alone in having an interest in things that will eat bacteria, but the whole topic is – to put it mildly – intimidating. This 'thing' that eats bacteria is a virus, a 'thing' that exists in the grey zone you didn't know existed between the black and white of 'dead' or 'alive'. To this day, viruses render biology, philosophy, and Wikipedia unable to define definitely what the property of being alive means. And they have inscrutable names, like Sphaerolipoviridae and Matshushitaviridae.

That's not all. Even in the highest most pristine environments viruses rain down depositing between about one quarter of a billion and seven billion virus particles on every square metre. Mostly from marine sources, there are estimated to be 10^{30} virus particles just in the world's oceans, they outnumber all the other biological entities on earth combined[1]. The human microbiome is thought to contain 30-40 trillion (10^{12}) bacteria, roughly on par with the number of human cells. The human 'virome', the virus particles that also live on or within us, is expected to have ten times the number of bacterial cells. It's not unlike trying to guess the amount of 'dark matter' in the universe, the numbers are beyond comprehension.

The astonishing genetic and physical diversity of bacteriophages defies belief, and certainly taxonomic classification systems. The concept of a 'species' is not specific enough to be used to describe the similarities and relationships between them. Identical, or nearly identical, virus particles can be found in completely different environments, and yet the same environment hosts totally different types of particle, while 'phages can be so particular to their host cells that they have been used in diagnostic tests to identify strains of bacteria. This apparent chaos and ubiquity is most likely to be because of their global atmospheric persistence and dispersal; the only limitation is probably the bio-geographic limits on the distribution of their hosts. Some writers imagine viruses and bacteria as a vast global atmospheric 'soup' of shared genetic material.

A HISTORY OF PHAGE FINDS

The first 'phages that attack the bacteria that causes AFB were recorded in the 1950s, first in Russia (1953) and, for the English-speaking world, by T.A. Gochnauer at the Canadian Department of Agriculture in 1955. It was a discovery not thought particularly significant at the time and it would be 60 years before we began to isolate and sequence the genome of more, just as antibiotic resistance was becoming a concern. By 2020 48 types from several countries had been sequenced and published[2]. The ABAtE Project at the University of Canterbury have added another 26[3].

The last 20 years have produced a modest surge in the effort to understand and use 'phages to treat all sorts of bacterial diseases, and a handful of products have regulatory approvals for treating, for example, Fireblight[4]. Another, not yet with any approval but to be part of the Canterbury project, is kiwifruit PSA. Some other Pseudomonas bacterial diseases have approved 'phage products, but these are not yet widely used. Phage 'cocktails' have also been recognised as potentially a useful green technology for combating food-borne pathogenic and spoilage bacteria for the food industry.

NON-GM BIOCONTROL

Bacteriophage controls have some quite attractive advantages as disease control products. They can be highly specific to a given bacterial species or strain, found everywhere and clearly have no 'off-target' effects; plants and animals are always exposed to them already. They are easy to isolate, can be applied in low concentrations, penetrate bacterial biofilms, and accumulate or multiply exponentially where they are needed, for only as long as the target pest is present. They have no residue. 'Phages can also adapt and mutate to overcome resistance mechanisms bacteria may develop.

A successful 'phage hunt has many things to think about. The first stage of the ABAtE project was to catalogue the strains of AFB bacteria we have in New Zealand. You have to carefully identify the bacterial host so you get the right 'phage(s). Bacteria can, and do, develop resistance to 'phages. Developing 'cocktails' incorporating several strains is a clever mitigation, but it isn't always easy to find enough compatible strains. 'Phages can be quite fragile and sensitive to radiation (light), heat, and ion concentration. That's not ideal in an agricultural setting with potentially high (or low) temperatures, high exposure to ultraviolet radiation and agricultural chemicals, desiccation, and fluctuating soil moisture or pH. Not only are 'phages in competition with bacteria, they can be in competition with each other too, and there appear to be lots of 'phages simply not suitable for one reason or another. For example, they might induce the bacteria to make a toxin.

The potential pool of therapeutic 'phages can notionally be grouped in two: 'phages can be 'virulent' or 'temperate'. Virulent 'phages enter a host cell and immediately start to use the cell to make copies of themselves, after which they lyse (break apart) the host cell to release the new 'phages. Temperate 'phages are sneakier, entering the cell and integrating their genetic material into the host's. The infected bacterium is called a lysogen, and the integrated 'phage is called a prophage. The intertwined evolutionary success, and virulence, of this combined entry can be very different from the original bacterium. At some future point the bacterial cell will be destroyed and the prophages released as 'phages.

Virulent 'phages are therefore also described as 'lytic' (they lyse things), and temperate 'phages are also described as 'lysogenic' (they make lysogens). Complicating that description (nothing about 'phages is simple) some 'phages operate both life-cycles, switching from one to the other depending on circumstances we don't understand. I wouldn't have brought that up, except that all the AFB 'phages so far known, including the New Zealand ones, are temperate (lysogenic) in some circumstances *and* virulent (lytic) in others. We know from the ABAtE's study the AFB bacteria contain prophages, and we know the bacteriophages produce a protein (integrase) that helps to join the 'phage genome to the bacteria's genome. That all matters because it limits the pool of 'phages that can be used, if the wrong one is used our problem gets worse not better. It's essential that every potentially useful 'phage is carefully examined and tested. In the case of kiwifruit,

most of the candidate 'phages are lytic, so these are the ones selected for use, which perhaps simplifies the matter.

COMMERCIAL SOLUTIONS

The regulations that govern the use of 'phage 'therapy' can be challenging, if they exist at all. New Zealand biosecurity laws preclude the import of non-native 'phages for domestic release so we have to find local ones. Given the omnipresence of 'phages described earlier, that seems silly. Given also the specificity of the bacterium to bacteriophage relationship, it probably doesn't change anything – we would have to find local ones anyway. As with anything new the rules are not properly developed, and not coordinated between jurisdictions.

The big global organizations approving 'phage cocktails used in agriculture are the European Food Safety Authority (EFSA) and the US Food and Drug Administration (FDA). One particular problem with phage-mediated biocontrol is that 'phage mixtures/cocktails need to be revised all the time to lyse as many newly emerging strains of the target bacterium as possible. However, EU regulations, but not US regulations, require that any change to one of the phage cocktail's components would need re-registering and adhere to GMP (Good Manufacturing Practice), which is time consuming and expensive.

An issue related to the regulatory environment that will already constrain the production of 'phage-based treatments are the prevailing economic circumstances[5]. A conventional medicine like the latest antibiotic is developed once and sold, and can be neatly 'packaged' with its intellectual property (IP) rights. 'Phage therapies are not like that. We should expect that they are sourced, characterised, developed and constantly redeveloped and recombined. How then do we engineer a financially sustainable process, and who's IP is used where? (see Figure 1.).

The work in Canterbury is awesome, serious new science and enormously ambitious. That it continues to engage with its 'citizens' too is a credit to the team. If New Zealand is going to convert research success into an industry providing economic and social benefit from 'phage therapies – and that is the whole point of the programme – that multi-disciplinary engagement will be an essential component.

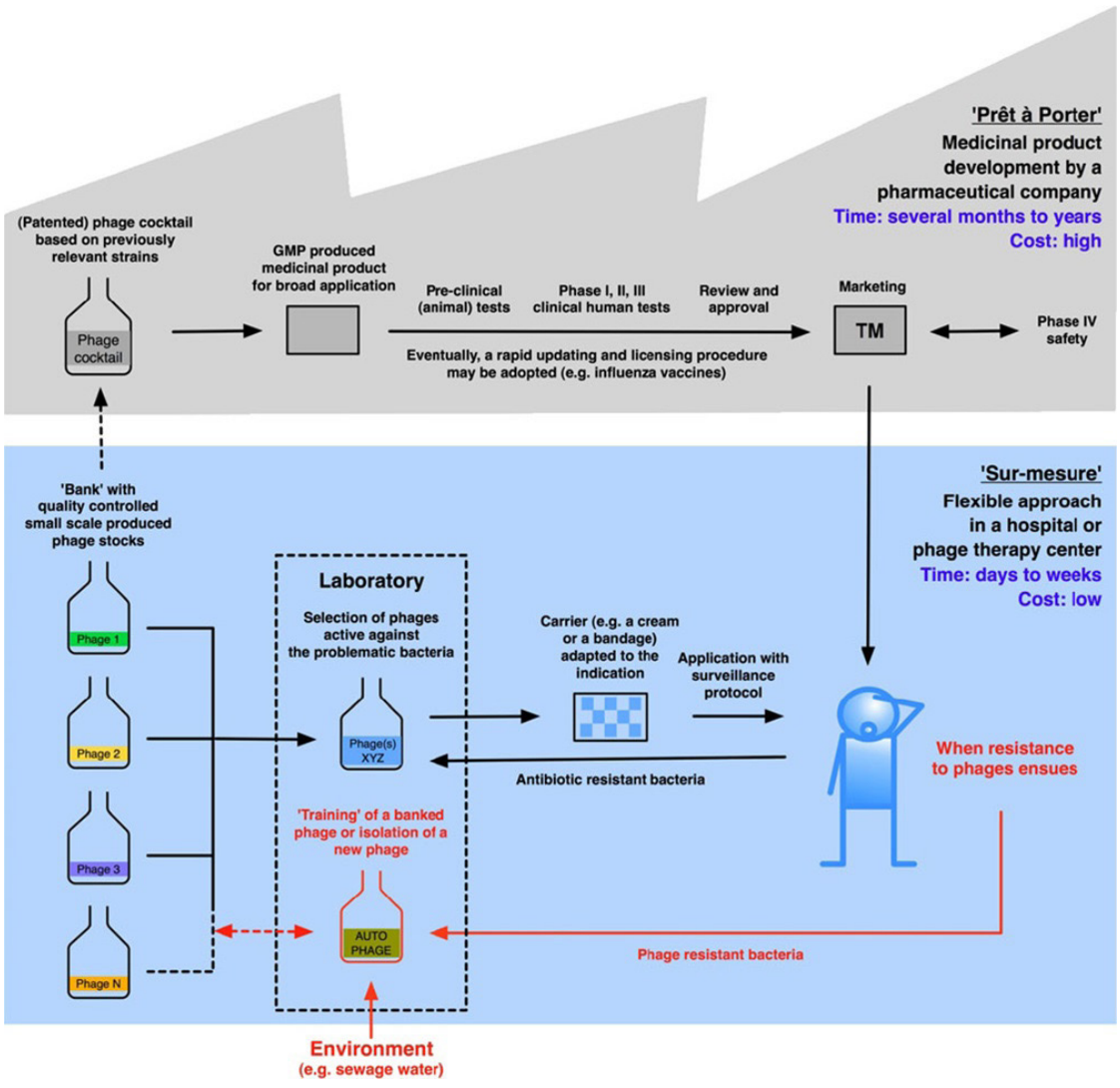


Figure 1. The Phage Therapy Paradigm by Belgian scientist Pirnay et al. which outlines a process which could be followed to provide quicker and more cost-effective redevelopment and availability of phage therapies, or 'cocktails'.

References

1. Curtis A. Suttle Viruses in the sea Nature, Vol 437,15 September 2005, doi:10.1038/nature04160
2. Casey Stamereilers et al, Genomic Analysis of 48 Paenibacillus larvae Bacteriophages, Viruses 2018, 10, 377; doi:10.3390/v10070377
3. Kok DN, Zhou D, Tsourkas PK, Hendrickson HL. Paenibacillus larvae and their phages; a community science approach to discovery and initial testing of prophylactic phage cocktails against American Foulbrood in New Zealand. Microbiome Res Rep 2023;2:30. https://dx.doi.org/10.20517/mrr.2023.16
4. Carla Pereira, Pedro Costa, Larindja Pinheiro, Victor M. Balcão, Adelaide Almeida, Kiwifruit bacterial canker: an integrative view focused on biocontrol strategies Planta (2021) 253:49 https://doi.org/10.1007/s00425-020-03549-1
5. Jean-Paul Pirnay et al. The Phage Therapy Paradigm: Prêt-à-Porter or Sur-mesure? Pharm Res (2011) 28:934–937 DOI 10.1007/s11095-010-0313-5 https://www.researchgate.net/publication/47730148 See also Jean-Paul Pirnay et al, The Magistral Phage, Viruses (2018), 10, 64; doi:10.3390/v10020064

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NZBI Offers Public Brief to New Government

New Zealand Beekeeping Inc (NZBI) is not waiting for a new government to be sworn in before making the desires of beekeepers known to those in power. The industry body has drawn up a four-page public brief, which they say will be presented to both National and Act parties, outlining changes required to move the Ministry for Primary Industries (MPI) towards providing a "competent, legitimate and efficient" service to beekeepers.

Representing "primarily small to mid-size beekeeping businesses", NZBI's Apiculture Briefing conveys their analysis of the state of the industry, before offering an agenda of five key recommendations to New Zealand's incoming government.

Assessing the industry as "shrinking and economically distressed", the briefing introduces a "destructive combination of industry structure and politics" combined with "poor regulatory management by MPI", plus serious biosecurity risks. All of which need a new approach by government and industry, say the beekeeping body.

Summarising that "we need bees, bees need beekeepers", NZBI's brief will leave the incoming minister in no doubt about the value of the role beekeepers play, while also establishing the recent failings of the industry. From pointing out that pollination is being adversely affected as hive numbers fall back, to establishing some of the leading reasons for the decline (honey returns below cost of production, larger firms squeezing smaller, and successive failures by government and industry groups pertaining to mānuka definitions and protections), NZBI's brief attempts to explain the recent "boom to bust" of the honey industry.

The governance structure of the American Foulbrood Pest Management Agency has long been a concern of NZBI, who are opposed to Apiculture New Zealand (ApiNZ) overseeing the Agency. The Apiculture Briefing points out that "AFB incidence is rising, as are levies, with steeply declining value for levy money invested" and implores the government to consider competing proposals to the 10-year Plan review lodged recently.

Another key bug-bear of the industry body – which was established as an alternate national beekeeping body soon after the National Beekeeping Association and Federated farmers beekeeping division merged to form ApiNZ in 2016 – is the too-frequent auditing requirements of Risk Management Plans for extracting and processing honey. The brief calls audits of plants which are not running at that time as "abusive" and which "operates against the public interest".

On the topic of biosecurity, NZBI call it "the big unspoken issue" of the industry and that, while further incursions are inevitable, they have little confidence in MPI's biosecurity operation, "which invests too little in border, and especially in vital pre-border checks, and places too much faith in its ability to respond once an incursion occurs".

All in all, NZBI's summary of the industry state of play leaves the incoming government with five key points which they can work together on to help improve MPI's operations:

a. *The industry is essential to the functioning of the rural economy and environment. There needs to be a clear senior point of contact in MPI for the industry to engage;*

b. *Biosecurity needs urgent review, more funding and a real check that MPI's operation has the sense of urgency and the senior grip and authority needed. A rapidly changing climate means pests and diseases are on the move and we need to be ready;*

c. *MPI's cost recovery system needs a thorough overhaul. MPI can't be dependent on cost recovery from industries under pressure to pay for core functions. If that means a smaller, but better funded and more responsive department, so be it;*

d. *MPI's reliance on levy or fee-funded agencies needs review. The AFB PMP Agency and AsureQuality are both examples where the agency uses the Crown's powers and industry fees and levies to act in their own interest, not in the public interest. Actual poor performance is the result. The current decennial review of the AFB PMP should be seized as an opportunity;*

e. *Like many industries, there needs to be a workforce strategy. Skills are important, scarce and easily lost. Bees literally can't look after themselves, and this is a sector where pressures can't be relieved by immigration. The whole industry and MPI should be involved in this.*

A Win for Beekeepers?

As of October 31 MPI has announced RMP holders with appropriate knowledge and competencies would be able to move from six-monthly audits to once-a-year without carrying out specific training courses. It means experienced operators should be able to reduce audit frequencies, without the expense of extra training. The competency of RMP holders, and therefore their ability to move to less frequent audits, will be assessed by AsureQuality auditors, meaning test cases in the coming months will be followed with interest.

Iconic, Inter-Generational Beekeeping Business Hits the Market

Iconic Marlborough Beekeeping business J Bush & Sons is up for sale, with the Bush family listing it for the first time in its 107-year existence. With hives sited from the Marlborough Sounds to well up into the South Island high country – including on New Zealand's largest farm – and a label boasting blue borage, mānuka, clover and honey dew, it's a unique business. We find out why the current generation of Bush beekeepers have made the decision to pass the business on and what's on offer.

The decision to sell a business which has been founded by your grandfather, in the family for 107 years, and you, your brother and father have worked in together for most of your life is not an easy one to make. So, why have Murray and Peter Bush decided to put their 1800 hives, honey label, extraction and packing plant, vehicles and hiveware on the market?

"The reason is, there isn't going to be a fourth generation of Bushs in beekeeping and the current owners are at retirement age," Murray Bush explains.

While many beekeeping businesses that have gone up for sale in recent years are due to their failure to turn a profit, Bush says this isn't the case in the instance of J Bush & Sons.

"It's a viable and profitable business, but it's time for someone of a younger generation to put their stamp on it.

"We go all the way from hive to plate in the sense of retail packing. So, it's a fully integrated system. Ideally, somebody would be able to walk in and do the whole thing … Really everything is on the table until we start taking it off and we adapt to an inquiry. So, it's being sold as a going concern, because that's what makes the business work financially at the moment," Bush says.

It's a truly unique business too, able to market their Molesworth Blue Borage honey from their hundreds of hives located on New Zealand's largest farm, Molesworth Station in the Marlborough high country. While their beekeeping takes them there, or on nearby Muller Station, one day, the next they can be at the

Peter Bush, left, and staff at one of J Bush & Sons apiaries, which are spread from the sea to the skyline in Marlborough and now, for the only time in their 107-year history, are up for sale.

Blue borage is at home in the Awatere Valley of Marlborough, where J Bush & Sons hives collect honey for their private label.

other end of the province, collecting mānuka honey from the Marlborough Sounds. The business's base and extraction and packing plant is located in Blenheim, a central location between the coast and high country.

"There are endless places to go and hide for lunch. You won't get any work done, but we do have some of the best views in the country," Bush claims, and it's hard to argue with him.

Founded by Horace Bush in 1916, Murray and Peters' father John Bush has worked in the business for most of his life and didn't stop "throwing boxes" until he was 76 years-old. At age 92, he still works delivering honey to shops.

When Murray returned home to work in the business for good in 1991, brother Peter was already a fixture in the hives, meaning they have worked side-by-side for the past 32 years and for many years alongside their father.

So, with a proud family history and present such as that, who do they see as best suited to take the business into the future?

"It's ideal for someone with experience in the industry, somebody possibly wanting a different lifestyle from the mānuka wars of the North Island, a different environment, different climates. Possibly somebody stepping up from being a straight producer who wants to be a producer, but then control their honey's destiny a little bit more and have the upside that's attached to that. It's somebody wanting a new challenge in the industry, or just adding to their existing skills," Bush suggests.

Currently the J Bush & Sons honey range is listed in a range of domestic retail outlets, including several supermarkets.

Given the scale of the properties their hives are located on, and their retail presence, there is scope to grow the business too, according to Bush.

They have spoken to both their immediate and extended family though, and it won't be them taking the reins.

"It's time to use our precious time for other things," Bush says of he and his brother, adding "to play with the grandkids, and go fishing".

John Bush – who at age 92 still has involvement in the family business – showcases a mānuka plant at their property in the Marlborough Sounds.

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When Varroa Arrived

With Australia having recently made the decision to move to management of *Varroa destructor*, following 15 months of eradication efforts, we look back on the early years of varroa in New Zealand with Jane Lorimer. The Waikato beekeeper was a fresh face on the National Beekeeping Association (NBA) executive at the time of incursion and moved up to be vice-president and then president, by 2003, as the industry body led beekeepers through some challenging years.

The date of April 11, 2000, is seared in Jane Lorimer's mind. It's the day beekeeping in New Zealand changed forever as varroa was discovered for the first time, in Auckland, setting off a tumultuous few years as the country grappled with the appropriate response. Looking back, another date springs to mind to – her birthday the previous year when she was fatefully seconded onto the NBA executive.

"Third of October. They rang me up and said, I want to know whether you're coming on to the executive by 10 o'clock tonight," Lorimer recalls.

She had but six months in the role before they had to spring into action, acting as the beekeeping industry's representatives in a brief eradication effort, then a management plan to slow varroa's spread. Australia is now following a similar path.

Response headquarters was initially a "dive" motel close to Auckland airport, where tensions were high. Lorimer based herself there and, among other beekeepers, helped Ministry for Agriculture and Forestry (MAF) staff conduct delimiting surveys. Ensuring appropriate communications with beekeepers was the key role of the NBA at the time she says.

"I ended up spending months up there at the HQ, which was pretty demoralising. I was doing things like talking with South Island beekeepers and asking, if we killed off hives in the North Island would they be willing to supply hives to restock?" Lorimer says.

Jane Lorimer was serving on the executive of the National Beekeepers Association when varroa was detected in New Zealand in 2000 and was elected president in 2003, some tense years in beekeeping.

Delimiting surveys in the Auckland area showed significant presence of mites, but other areas of the country were free of the parasite and so hive movements were controlled in and out of the Auckland "infected" zone.

While there was a level of adrenalin to run on in the early days, after a while the work got demoralising.

"A lot of MAF guys got counselling during the time up there. The NBA personnel were up there and we didn't get offered anything. So, you know, it got pretty tough," she reflects.

"It was pretty high stress, in general, for many people. A lot of beekeepers were asking 'what are we going to do? We can't do anything because of the movement controls and we need to feed hives'. So it was pretty stressful at the headquarters."

It wasn't just her role with the NBA that was tough either, the majority of Lorimer's own beehives were caught up in a movement-control area, while her business's honey house was on the other side. Those movement control lines would move as the response changed and a key job of the NBA was organising meetings in various towns to keep beekeepers up to date with changing rules and educate on how to manage hives with varroa.

"We spent quite a bit of time in public meetings around the North Island talking with beekeepers. At least at that point in time we had a good branch network with the NBA. So, it was relatively easy to get hold of rural people," Lorimer says.

By July of 2000, just three months after the initial discovery of varroa in New Zealand, further attempts at eradication on a national level were deemed not technically feasible by the Government and thus ruled out. That was the correct decision Lorimer says.

"We realised, after a while, that varroa just moved so much faster than what you thought it did, and that's what I've told the Australians. I had one meeting with them and I told them 'it's going to be beyond where you think it is'."

That has indeed been the case in Australia, where the mite was first detected in New South Wales in June 2022 and extensive efforts to eradicate were made – including euthanising tens of thousands of managed and feral colonies – before further outbreaks of the mite were discovered across the state. The decision to move to management of varroa was made on September 20 this year.

Utilising movement control of hives, such as NSW is doing, was a valuable tool in the response on this side of the Tasman, Lorimer believes.

"I think for those who could get some benefit out of movement controls, it was probably worthwhile. I mean, it took till 2006 to get down to the South Island. So, it enabled the South Island

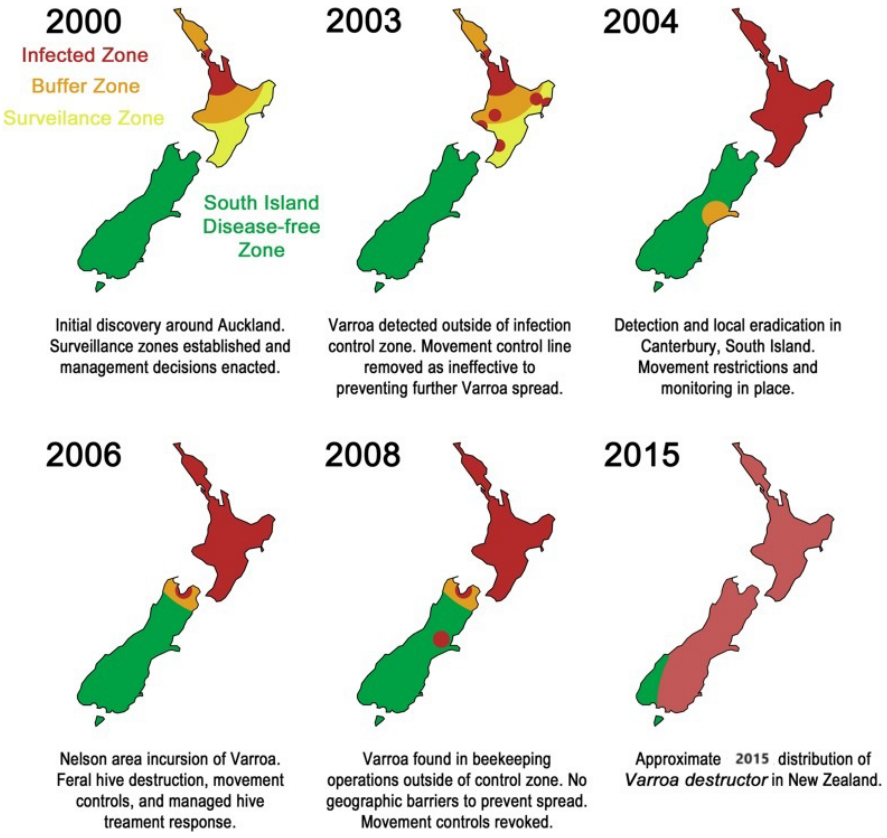
beekeepers to actually start to prepare for varroa incursions. It was pretty hard on those of us who had varroa from day dot though, and had that expense without any experience."

Beekeepers were lucky to have scientists with knowledge of the mite who were willing to educate others in Mark Goodwin and Michelle Taylor. The later has also been working closely with the Australian response, some 20 years later.

As well as encouraging the practical use of hive movement controls, Lorimer says the Australians should be focused on keeping deformed wing virus out of the country and on getting as many treatment options approved as possible.

While beekeepers in 'The Lucky Country' might not be feeling so lucky at present, Lorimer believes they might be luckier than most in that the later incursion of varroa compared to most of the rest of the world means they are closer to new technologies – such as the RNAi work being conducted at Victoria University of Wellington – potentially providing more answers to the problem of varroa. And there is one more thing in their favour, Lorimer says.

"The Australians have at least got us to learn from."



Varroa's presence in New Zealand through the years.

New Innovations and Designs

At Pharmapac we're committed to continuous improvement, so we're always looking for new innovations and developing designs in order to be more sustainable and to provide greater value for our customers.

One of the ways we're doing this is by broadening **our range of PET products available**. After much demand, we have expanded the range to include a smaller 60gm pot, as well as the newest sizes – the 250gm, 400gm and 500gm PET pots.

These new pot sizes come in clear, amber, and rPET and provide even more variety to the supply of PET pots, jars and flasks available from Pharmapac.

APPLICATIONS AND USES OF OUR PET POTS

The demand to manufacture a greater range of sizes of these pots came from customers wanting an unbreakable and lightweight alternative to glass. PET packaging is suitable for contact with food and conforms with FDA and European requirements.

The smaller 60gm pots are ideal for unique smaller runs of honey or multi packs. The 250gm, 400gm and 500gm are perfect for a range of honey types and sizes while maintaining a unique family look.

THE BENEFITS OF USING PET

There are significant benefits of using PET packaging:

1. PET is lighter than glass.

Because PET is much lighter than glass, it is easier and more economical to ship. Not only are freight costs lower for product suppliers and their customers, but shipping PET packaging is also better for the environment due to its lightweight nature.

A glass honey jar is up to six times heavier than Pharmapac's PET equivalent (based on a 250gm honey jar). The heavier the weight to be transported, the more fossil fuels are used to move products.

2. PET is a durable packaging option.

PET packaging is a durable and safe option when we consider its very low breakage rates. This is a significant factor as PET pots, jars and flasks are commonly used for food, supplements, health and beauty products.

Products contained in PET jars and pots not only require a lot less protective packaging when shipped, but there is

also minimal product spoilage when PET packaging is used.

Breakage is an issue with other types of packaging in shipment as well as when it's on the production line. Any time there is a breakage (for example, with glass) there is downtime in production while the issue is fixed and health and safety checks are completed to ensure there are no contaminants in the packaging produced.

3. PET has a lower carbon footprint than glass.

Plastic often gets a bad rap, but when we look at the full picture of sustainability, it is one of the best options for packaging.

A recent Life Cycle Assessment (LCA) study by Thinkstep for Tetra Pak compared the carbon footprint of eight different packaging options. These included glass, PET (#1), recycled rPET (#1), HDPE (#2), and carton. Glass had the highest carbon footprint by a significant margin. In the study comparing the carbon footprint of packaging for a litre of milk, the carbon footprint of glass was 0.385kg CO2e, while the footprint of PET (#1) was 0.251kg CO2e and rPET even lower at 0.105kg CO2e.

When we look at the sustainability of packaging, we consider its full life cycle from cradle to grave. We look at the environmental footprint over its entire life cycle and the greenhouse gases (GHGs) the packaging generates across its life cycle. This includes how it is manufactured, transported, used and disposed of at end-of-life.

All of Pharmapac's jars and lids are made locally in New Zealand rather than being imported like its glass jar equivalent, which increases its carbon footprint. The new range of PET packaging options available offers benefits for the customers and end users alike.

If you'd like to know more about the Pharmapac PET packaging options, **please get in touch**. ■

Play Your Part – Complete COLOSS Now

Colony Loss surveys are filed all around the world and New Zealand beekeepers are global leaders in their participation rates. COLOSS director Pike Stahlmann-Brown, of Landcare Research, is keen to keep it that way and so explains the validity of the data collected and that Kiwi beekeepers who haven't yet completed this year's survey have a few weeks remaining to do so.

BY PIKE STAHLMANN-BROWN

Pike Stahlmann-Brown has conducted New Zealand's version of the global Bee Colony Loss Survey since 2015, and advises beekeepers that there is still time to check their emails and complete the 2023 survey, if they haven't already.

Colony loss surveys are now regularly conducted in more than 40 countries worldwide. An analysis soon to be published in the *Journal of Apicultural Research* reports on losses for 36,000 beekeepers with 1.3 million colonies in 37 countries. Excluding New Zealand, the average national over-winter loss during winter 2021 in the Southern Hemisphere / winter 2021-22 in the Northern Hemisphere was 21.6%. Our over-winter losses during this time were 11.3% (they have since risen to 13.5%).

The New Zealand Colony Loss Survey is now in its ninth year. Our survey regularly has the highest participation rates in the world, both in terms of the share of all beekeepers who complete the survey and the share of registered colonies covered in the reporting. Such high participation underscores the integrity and reliability of the data.

Still, about once a week, I have a conversation with a survey skeptic. Most often, the skeptic says something along the lines of "I

don't believe the survey results because beekeepers who had high losses don't answer the survey or don't answer truthfully". That is, they think that actual losses are way higher than people report.

I recently attended the biennial conference of COLOSS, the international collective of researchers who pioneered the science used in COLony LOSS surveys. It was held in Slovenia (formally called "Carniola", a term that will no doubt be familiar to many readers!). An interesting presentation by Jiří Danihlík from Czechia addressed the issues raised by survey skeptics head on. Czech beekeepers register their apiaries and colonies with the Ministry of Agriculture each September. In January and February, the State Veterinary Administration samples registered colonies in each of the country's 76 districts. At the same time, Jiří conducts the Czech Colony Loss Survey. Thus, Jiří was able to compare colony losses reported in the survey with colony losses recorded by the State Veterinary Authority for the same period of time!

And what did he find? Losses reported in the colony loss survey were within 10% of losses recorded by the State Veterinary Authority in 68% of Czech districts. So, if beekeepers in a district reported 10% losses, official statistics showed losses of between 9% and 11% seven out of ten times. What's more, where losses reported in the survey differed from official data, losses reported in surveys tended to be *higher*.

Czech beekeepers differ from New Zealand beekeepers in many respects. For one, 60,000 beekeepers in Czechia look after about the same number of colonies that 10,000 beekeepers manage here. But are New Zealand beekeepers systematically less honest than Czech beekeepers? I wouldn't bet on it.

A carniolan honey bee at work. Pike Stahlamann-Brown has recently returned from the home of the Carniolan (Slovenia) where he attended the biennial international COLOSS conference and New Zealand beekeepers could boast the best response-rate to the survey in the world.

If you haven't completed your 2023 survey yet, please check your inbox for a reminder that was sent on 1 November 2023. If can't find the email, or if you didn't receive a link, send your apiary registration number to brownp@landcareresearch.co.nz, and I'll re-send your link.

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NOVEMBER FEATURE

Hives on the Move

In so many of New Zealand's beekeeping businesses, profitable beekeeping requires shifting of hives between sites to maximise each's earning potential across the season. Now is a key period for it too, with tens of thousands of beehives coming in and out of kiwifruit orchards, so this month we feature a few of the options out there that make hive moves faster, more efficient and safer.

Whether it's to chase honey crops, pollinate food or seed crops, place the colonies somewhere more accessible for winter visits, or they just need to find a new home, hive moves are the domain of most beekeepers at some point in the season. When you are doing it with any scale, mechanising the process soon makes sense from a health, safety and economic perspective.

Two of the most popular, but quite different, mechanisations available to Kiwi beekeepers are the highly-efficient Avant loaders, available from Glenbrook Machinery in Auckland, and the truck-mount Ezyloader cranes. We check in with experts in both, and also find out how some Whanganui beekeepers are illuminating the hive-moving process.

Avant Loaders

The most efficient way to move large amounts of hives around the countryside is in pallet loads of four hives per pallet, which can mean hundreds of hives per truck load. There's no better way of loading and unloading those millions of bees from their road transport than the range of Avant loaders, says Glenbrook Machinery's Phil Pinker.

"They increase efficiencies with palletised hive handling. Being all-terrain they will go further than a standard vehicle and work well in conjunction with truck and crane set ups," Pinker says.

Most beekeepers use the 600 and 700 series of the diesel-powered loaders.

"The 600 is perfect for most applications and keeps the towing or transport weight to a minimum. The 700 is the largest that can still be legally towed behind a vehicle keeping the GVM inside 3500 kilograms."

Avants allow accurate and safe placement of hives on site, and Pinker says they are used by a wide range of beekeepers,

from those chasing mānuka honey crops, as well as other floral varieties and, of course, for a range of pollination moves. It's not just the movement of hives which they can assist beekeepers with either.

"The 4N1 bucket is ideal for maintaining tracks and repairing slips and the likes. The flail mower with hammer flails is a popular attachment for beekeepers as well, to break in overgrown grass and gorse areas," Pinker says.

While their agency might be based in Auckland, they supply beekeepers all over the country and service agents are available nationwide. There are also hire and lease-to-own options for beekeepers to consider if they want to give the all-terrain loaders a trial.

Avant loaders can easily be transported on trailers or truck decks to offer beekeepers an efficient, all-terrain method of loading and unloading beehives and shifting them at apiary sites.

Ezyloaders

Canterbury beekeeper Barry Hantz holds the New Zealand franchise for Ezyloader, hive-lifting cranes manufactured in New South Wales. He says they have two clear benefits to beekeepers – they save your back and mean hive moves can be made safely by one person.

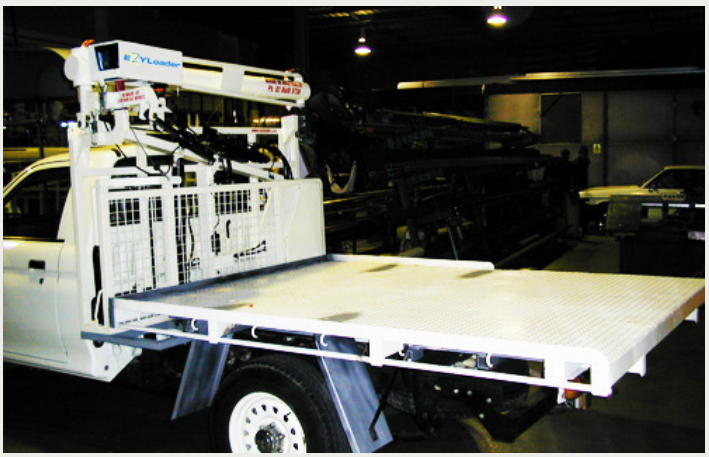
"I have had a few enquiries and the reason they are buying Ezyloaders is because they can't find staff to help them shift hives. The price of labour leads them to use an Ezyloader and do it themselves," Hantz says.

While there are six different cranes in the range, Hantz says beekeepers tend to use either the 125, 200 or 300 models, with the numbers relating to their load capacity. Once mounted on a vehicle, Ezyloaders are connected to either 12 or 24volt electrics which powers a built-in hydraulic motor. Single hives or two to a pallet setups are generally used.

"Most of the guys with the 300s have their hives on double-pallets and are lifting two hives at a time. That is how our operation is set up and on a truck load of about 40 hives it takes about half an hour or less to load," Hantz says.

They fit to utes or larger trucks and single-cab Toyota Land Cruisers are a popular choice, as well as trailer mounts. With a forklift or similar loader they only take about 15 minutes to detach and remove from their mountings too, meaning they can easily be transferred between vehicles or removed altogether if not required at certain times of the year.

There is very little servicing required "a few grease nipples and bearings to check once a year" says Hantz, while he has spare parts on hand at his Canterbury base.



An Illuminating Addition to Vehicles

The heavy lifting involved in moving hives is task enough when beekeepers can manage it in daylight hours, and even more challenging in the dark when many of the moves take place. Another device which makes the task much easier – and safer – is the red LED lights which Kai Iwi Honey supply to beekeepers.

"It's simple, bees see black when they see red," Tony Valentine of Kai Iwi honey explains.

Therefore, by illuminating trucks and apiaries with their lights, beekeepers can safely carry out hive loading and unloading at night without dealing with a mass of bees making their way to lights.

How strong are the LED's glow? "I left them on on the loader while coming up the driveway last night and the neighbour's house, 100 metres away, was well lit up," Valentine says.

They fit to electrical systems with anywhere from 10 to 30 volts, and therefore are perfect for beekeeping vehicles which typically run on 12V or 24V systems, be they trucks or loaders.

"We have the lights fitted to both ends of our lifting arm on the truck, as well as a loader and the truck headboard," Valentine says, describing perhaps the most well illuminated work site in the beekeeping world.

Confessions of an AP2

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

BY MAGGIE JAMES

For quite a few of my 15 years in the role I inspected hives by myself and, in the space of a few weeks in autumn each year, got through hundreds of commercial hives in the Ellesmere area. Initially this meant 24-hour surveillance with sticky boards and strips, plus 500gm samples of bees from each hive. Sometimes soil and honey samples were requested by the higher-ups.

I reported mainly to Tony Roper, AP1, AsureQuality and was never declined access to any commercial apiary. Although, then not required, as much as possible I spoke with beekeepers prior to inspection, and this often gleaned info which sped things up on surveillance days – it was good PR for getting inside the gate. If there was a sign saying "no admittance" we took note of it! Only twice, for safety reasons, did I refuse to inspect an apiary.

When "The Rope" vastly increased my contract, I was assisted by well-known Canterbury beekeeper Barry Sheehan (DECA 1!). The area we inspected together for over eight years was from Pendarves in Mid Canterbury through to Kaiapoi and the Canterbury foothills, including urban Christchurch. Later, much of Banks Peninsula was added. It was a large surveillance area and the contract was undertaken in several highly organised weeks in late autumn and generally completed by May 15.

We made the task enjoyable with huge laughs along the way, meeting interesting people, seeing some interesting things. We became experts in the best places to have a lunch break or smoko – cemeteries preferably with a toilet, or bench to sit on, and whilst reading headstones we got a history lesson!

Here's just some of the things we got up to in-between smoko breaks, with a focus on disarming marital strife in this first batch of 'confessions'. At times we felt like psychiatrists given some of the curly situations, between husband and wife, in which we found ourselves the centre of...

Maggie James, who along with offsider Barry Sheehan, found themselves in their fair share of curly and often humorous situations when carrying out AP2 work in Canterbury.

WHY'D SHE LEAVE?

The hive owner, recently made single by a brassed-off wife, showed us to the upstairs, outside balcony where there were eight very strong hives. Double decker full-depth boxes, each with two full-depth honey supers and each with hive entrances facing the huge glass sliding doors of the large living area … all of two metres from the hives!

The guy truly could not understand why his wife had left him! We stayed out of that one, but did go so far as to offer advice on the weight-bearing capacity of the balcony…

LAST BUS ON THE BLOCK

The one beehive noted on the surveillance form was situated "next to the bus". Simple enough, right? Well, we got to the address and, gobsmackingly for the South Island, there were hundreds of buses,

campervans and caravans parked up with people living in them. Of course, no one knew where the hive was. So, we rang the phone number on the form … vicious ex-wife answered, told us to ring her when we discovered where her husband was!

We decided search for the hive was more in our remit than the search for the husband, so we drove up and down grass lanes looking for the hive which was – as per Murphy's Law – alongside the very last bus on the block, plus the hive was nearly as high as the bus. There was only one thing for it: a cuppa before inspection, to plan the tactics!

We were over 100km from home base and didn't want to come back. So, we drove our vehicle up to the hive and I stood on the front bull-bars and handed componentry down, until we were able to work the hive standing on the ground. Two surveillance hive inspections were completed in 24 hours, but husband is potentially still on the run.

A STICKY SITUATION

We drove up the long driveway to the house in our usual good spirit, only to be greeted by one right royal stroppy, let's say "bee", who informed us her husband had left her and not taken his two hives. Yikes.

Because of all the cast iron antiquities, displayed as artefacts – which hubby had also apparently not seen fit to take – it was a real effort to inspect the hives without twisting an ankle or blowing a fuse. Adding to the degree of difficulty, the hives hadn't been inspected for months and all the nearby shelter belts were poplars; therefore, hives were mega-propolised. The solution? A seriously large wooden wedge and big blunt-nosed long-handled hammer to separate the brood boxes.

The woman insisted on me giving a running commentary on what we were doing. On putting the miticide strips and sticky boards in, she informed us when we came back the next day she would be looking out for us, and we could overwinter the hives etc etc for her and she would make the syrup feed that night… This called for a stealth mission.

Next day, driving up the narrow valley road, we closely managed to avoid being involved – unlike two other cars in front of us – in a head on crash. We quietly, and safely, arrived at the road end of the 'beekeeper's' long driveway, opened the vehicle doors, but didn't close them for fear of giving our position away. Firing up the smoker, we walked silently up the driveway, no talking, removed strips and boards, hurriedly threw them in the vehicle, then made our getaway down the road. Phew – lucky escape!

DANCES WITH BEES

We visited a lifestyle block on the Mid Canterbury Plains to inspect one hive. No house on site, but the recently-separated-from-his-partner owner was living permanently in a real leather "Indian" tepee beside his hive. A cosy couple they made.

That's all for this month, but that sure as heck ain't all the quirky situations we encountered. So, I'll pen a few more for another day!

Full Steam Ahead – Cells, Queens, Moves and Swarms...

BY PATRICK DAWKINS, OWNER PYRAMID APIARIES

In last-month's compilation I claimed we were "near full noise" and now, following an October where hives kept me busy both day and night, we can say it is officially full steam ahead, with hives out of the cherry orchards, onto their summer sites, and swarm season upon us. All the while the queen mating units are filling, both with nectar and pollen from the spring flows, as well as queens on the lay.

In Marlborough, at the top of the South Island, our contract pollination options and fairly well limited to a handful of cherry orchards that are valiantly holding off the seemingly unstoppable march of vineyards across the plains. That said, the 120-odd Pyramid hives which are distributed (one hive at a time unfortunately, no palletisation here) in the orchards are enough to keep this beekeeper busy in October. I've spoken with beekeepers from the North Island who were just shifting their hives into kiwifruit orchards as mine were coming out of the cherries, meaning I can happily put the night hours behind me now, at least for a couple of weeks, while the toil very much continues elsewhere around the country.

The "night moves" follow beekeeping activities in the daylight hours, centred around cell-raising and caging newly-mated queens from our mating units. October is a key month for so many of the country's beekeepers and so locals are in and out picking up cells, while we spend weekends caging mated queens for sending all around the country on Mondays. All of our mating-yards are within 15 minutes' drive from home, and our cell-raiser and breeder queen hives are but a 100m walk from the house. It makes the long hours, at times such as this, a lot more manageable – it's the benefits of a small-medium size commercial operation without staff.

The queen orders usually slow as November wears on as beekeepers complete their spring splits and requeening. Already we are spending a bit less time on the grafting tool or with queen cage in hand. That's lucky because swarm season hits us in Marlborough from about mid-October and so we have also been dealing with that task recently.

One of the challenges of running hives for early season (September-October) pollination contracts is then managing very strong hives once they come out and swarm season hits. As I mentioned last month, nets on the orchards can weaken hives significantly, but there are always plenty which come out super-strong. So, within a few days of them leaving the orchard I visit them on their new sites and place an excluder and honey super on top. That's after working both brood boxes and pushing brood and honey down and any frames with space to fill up into the top of the brood nest. Along with running young queens (most are in their second season), we hope that's enough to stop half the girls flying the coop, and it usually is if done every two to three weeks.

The Pyramid Apiaries incubator has been filling up, as Marlborough beekeepers order in queen cells to make splits or requeen their hives, and mating units need their queen replaced.

Interestingly, I have had a few calls regarding swarms near our apiaries which I feel obliged to catch. On every occasion so far this season it has not been any of our hives that have swarmed though. I can only figure that the scent of our hives attracts a swarm from a neighbouring hive and they take up residence on a post or branch nearby to the sweet smelling stuff of our apiaries.

Writing about it is not going to stop the strong colonies from swarming off though, so I'll cut this month's column there as our next round of swarm prevention is fast approaching.

P.S excuse the lack of photos this month, it seems I have been too occupied with the work of the bees to snap many pictures as I go!

I'm the Prime Minister! What Could Go Wrong?

BY IAN FLETCHER

Here's the brief that Christopher Luxon ought to be getting as he prepares to become Prime Minister. We know the context: National and its partners have won the election (subject to a bit of detail around New Zealand First). They have a manifesto, and enough early wins they can push through quickly to keep the media off their back through to around Waitangi Day next year. Then what?

THE ECONOMY

First, the economy. It's slowing, and our trading partners' economies are slowing too. Migration will keep the housing market buoyant, and the Labour Government's decisions on public sector pay will keep the nurses and teachers off the streets. It won't stop skills moving to Australia, but that's a slow-burn issue. Construction is slowing, which will see some high-profile failures (and a lot of small ones), but that's probably manageable (and if unemployed builders move to Australia, that might actually help).

THE FARMERS

No, it the farmers. National's natural constituency. Rural businesses and supply chains are under pressure. Regulatory costs are high, and rural producers are starting to realise (as I've written) that Chinese demand is not going to come back anytime soon, if ever. So, it's probably permanent. The Reserve Bank has started to focus on this challenge (good). But they can't tackle the detailed work on innovation and supply chain competitiveness we now urgently need to prepare for a much poorer future than we've anticipated. The Ministry for Primary Industries (MPI) needs to lead that, with the Ministry of Business Innovation and Employment (MBIE). Having lost an hour of my life reading MPI's 38-page 'brief' for an incoming government, I despair. Self-indulgent, complacent, and economically illiterate. As a taxpayer, I want my money back.

TAXES

Which is the next issue: taxes. National (and ACT) won't be able to make the sums add up. There is immediate pressure on public services (especially health), an aging population and a growing population (a situation almost unique in the developed world – only France and the US share that challenge), and pressures on education, defence, police, prisons, roads, climate adaptation, infrastructure (water is the obvious example). If you cut spending, you can't do these, and people want these things fixed. They want to live in a first world country.

Big countries (mainly the US) just borrow to have lower taxes and higher spending, and so far, it's worked for them. But we're not big, and we can't just borrow. Taxes will have to rise at some point. While I'm sure that National and ACT will try to bluff their way through, the truth is that the sooner the incoming government levels with people, the less painful and more constructive the debate will be.

ACT has highlighted productivity as an issue. I agree. But they misunderstand the question, confusing productivity (output per unit of input) with profitability (the money firms have left over once today's costs are met). Productivity means investment in skills, infrastructure, R&D, IT systems, and a positive environment for innovation (new ways of doing stuff) and invention (new stuff). Some of these are public goods (like roads and education), requiring public investment – so, higher spending. Some require incentives (targeted rules for tax and accounting). It never, ever involves just cutting government spending; indeed, good research (Mazzucato et al) shows that better productivity *requires* higher government spending. So, back to taxes.

THE PUBLIC SERVICE

As regular readers will know, I think improving the public service is the main task facing a new government. There's interesting voting research that shows people don't vote for policies; they vote for perceived competence. That's almost certainly why Labour has lost. It means that the incoming government must take this issue seriously – slogans about cuts and show-off restructurings will just not cut it. Time to get serious. We deserve actual competence.

"EVENTS, DEAR BOY, EVENTS"

And finally, events. The British Prime Minister Harold McMillan famously said that governments were fundamentally derailed by "events, dear boy, events". At home, natural and man-made disasters are a certainty over time. Scandals are not certain, but over time they just get more likely. Stuff happens. High profile gang-related incidents look to be likely and to undermine moves to improve the sense of order on our streets. That matters.

Overseas, the last 20 months has seen three significant wars (Ukraine, Gaza and the one you probably missed between Azerbaijan and Armenia). China is in economic crisis, and we have already taken sides if there's conflict between China and the US. War or a political crisis in China would be devastating for New Zealand's exports (already depressed) and potentially for our wider access to markets for imports as well as exports if maritime trade is disrupted. I fear we have no plan for any of that. With the public service in its present state, I doubt that will improve quickly enough.

Chris Luxon is smiling with his election victory, but to maintain it he will need to "get the books to balance, fix the economy, rescue the farmers, sort out public services and hope that the Chinese, Australians and Americans can all get on," says Ian Fletcher.

Throughout all that, we need the political discipline to keep onside with Australia, and avoid saying silly things about others' crises. Our voice overseas actually doesn't actually count for much, but we can annoy people easily.

So, Prime Minister, congratulations! It should all be plain sailing if you can only get the books to balance, fix the economy, rescue the farmers, sort out public services and hope that the Chinese, Australians and Americans can all get on. And let's hope the weather holds and your colleagues in government don't run amok! Then you can get on with your manifesto commitments.

What could go wrong?

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.

Ian Fletcher has his views on what the incoming Prime Minister needs to focus on … and solutions to the nation's problems don't appear easy.

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