

ISSUE 31, FEBRUARY 2022

# APIARIST'S ADVOCATE

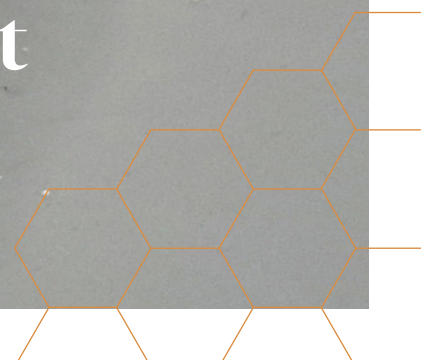


News, Views & Promotions – for Beekeepers – by Beekeepers



## Passing the Sniff Test

AFB Detector Dog Concept Proved,  
but Can They be Operationalised?



# Passing the Sniff Test

BY PATRICK DAWKINS



With their three-year-long research project into the ability of dogs to detect American foulbrood (AFB) spore odours nearing completion, the dog trainer, veterinarian scientist and beekeeper behind the work are confident they have proven the concept. Now though, there is frustration at what they see as hesitancy from within the AFB Pest Management Agency to take their conceptual discoveries to the next level and test their findings in an operational setting. Manawatu beekeeper Jason Prior, from Downunder Honey, and dog trainer Pete Gifford, say beekeepers could see the opportunity to develop a highly-valuable tool in the struggle towards AFB eradication pass by if those in a position to gain the most from it don't step up.

**While attitudes towards advancing the research into, and role of, "AFB sniffer dogs" is varied across apiculture, those who have been privy to the early findings of the Foulbrood Detection project seem unanimously encouraged.**

"The result of the dogs indicating on the correct sample every time was quite amazing," says Dr Neroli Thomson, the Massey University vet scientist who ran the project.

Gifford, who trained two dogs through his business K9 Search Medical Detention just outside Palmerston North to successfully identify AFB spores on all 12 occasions in the final trial, is confident too.

"We've proved the concept, there's no doubt we've proven it," he says.

The Management Agency National AFB Pest Management Plan fronts New Zealand's efforts to eradicate the highly infectious bacterial disease that kills bees prior to emergence from their cells. National compliance manager Clifton King calls the findings "a really important bit of science".

The chief executive of beekeeping's largest industry body, Apiculture New Zealand (ApiNZ), is encouraged too.

"Neroli and Pete have undertaken a good piece of research on a tight budget," Karin Kos says.

"That dogs can pick up the odour of AFB from the spores is a good start, but the trouble is, it is just a good start."

And that's a growing concern. Despite the positivity at the findings, building on that good start could prove to be difficult. Prior and Gifford, who made the initial research happen, say they are growing tired of their efforts being "stonewalled"



Beekeeper Jason Prior, owner of Downunder Honey, and Karin Kos, Apiculture New Zealand chief executive.

by the Agency. Even getting the research to this stage has been a struggle they say, and now is the time for those who could benefit most from the use of AFB sniffer dogs to come onboard.

## HOW WE GOT HERE

Gifford, having spent several decades training drug, bomb and people detection dogs before founding the K9 Search MD facility, chanced upon a conversation regarding AFB detection. His interest piqued, he approached his neighbour, Prior, who agreed to sponsor it on behalf of industry.

Going into the project, Gifford says he had no desire to prove dogs could detect AFB spores, but simply was interested in coming to a conclusion either way. That stance has not changed.

"We really just wanted to identify if the odour was available, if dogs could find it consistently, and how big was the scent picture for them to find?" Gifford says.

Dogs have been used by beekeepers to aid in the detection of AFB for some time, but there has been little to no published research to back up their function. That has previously been, and still is, a sticking point with the Management Agency, who have not used canines in AFB detection.



Massey University vet scientist Dr Neroli Thomson ran the Foulbrood Detection trial and plans to have the findings published.



"The Management Agency is required to use tools and make decisions based on scientific evidence. Dogs are in the position of having potential, but the evidence isn't there," King says.

Prior and Gifford therefore took on the task of trying to develop that evidence.

### THE THREE-YEAR PROJECT

The project started in 2019, and brought on board Massey University's vet science team through Thomson. The first 18 months was spent gaining funding and regulatory approval for the use of AFB spores, which due to their biosecurity classification cannot be grown without special dispensation.

The group collated \$45,000 in funding, largely from the Massey University Working Dog Centre and the Honey Industry Trust, but was also supported by the Southern North Island Beekeeping Group as well as in-kind contributions. That was paired with \$35,000 from the Ministry for Primary Industries' (MPI) Sustainable Food and Fiber Futures (SFFF) fund.

Once regulatory approval was gained, work in earnest could start. That saw Plant and Food Research, led by Michelle Taylor, begin producing *Paenibacillus larvae* (AFB) spores. Twelve samples of spores were produced, as well as 12 control samples that were identical in every way – except without the *P larvae* spores.

The AFB samples were then sent to Gifford, who spent five weeks training his Labrador-cross and heading dog-cross canines to detect the odours. Then came the day of truth, where two top

performing dogs in training were put to an independent test under strict conditions, run by Thomson and Massey University. That involved a carousel holding eight scent samples, seven of which were the controls with no AFB present, and only one with AFB.

The result was the perfect six out of six successful indications by both dogs – 12 out of 12 total – suggesting that the dogs could indeed recognise an odour from *P larvae* spore samples.

"For each dog, the probability of this result occurring by chance alone is very small, less than 0.1 percent," Thomson explains.

"The result of the dogs indicating on the correct sample every time was quite amazing and a testament to Pete's skill as a dog trainer."

### WHAT'S IN A SMELL?

While the project has been thorough in creation of the samples and both training and testing of the dogs, this is for good reason. Ensuring that it is AFB spores that the dogs are indicating on and nothing else, is crucial to the findings being respected and ultimately published.

AFB Management  
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compliance manager  
Clifton King.



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"What Neroli and Pete have done here is demonstrate conclusively that the dogs are picking up on the AFB spores and nothing else. From a scientific perspective, that is a really exciting conclusion," King says.

That is because the use of dogs in detecting AFB has been clouded by the question of whether they are indicating on AFB itself, or just unhealthy hives.

"If you cannot produce a sterile target odour to present to the dog, then the dog can't give you the right answer because you can't ask the right question," Gifford says.

By presenting the AFB spore odour to the dogs, alongside the controls that were guaranteed not to have AFB, then the correct question was being asked of the animals. And they answered correctly too.

"But what we don't know is would they actually be useful in an operational setting," Thomson explains.

"We don't know what level of spore they can smell. We don't know how reliable they are. We don't know if they could smell the *Paenibacillus larvae* spores compared to a different form of environmental bacteria. So, there's still a lot more work that needs to be done to work out if the dogs will be useful in eliminating AFB from an apiary. We don't know that yet."

In a hive in the field, or even in a shed full of honey supers, there could be plenty of secondary odours and thus the research now needs to move to an operational setting.

### AN IMPASSE

Encouraged by their findings, Thomson, Prior and Gifford are all hoping the second research project in an operational setting can get off the ground. It will come with a much higher cost though, likely in the realm of \$200,000 - \$250,000 Gifford estimates.

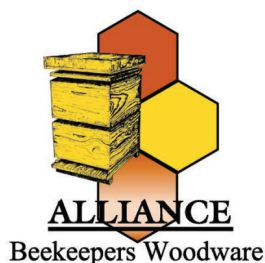
If the industry is going to make that sort of investment to developing a new tool for AFB detection, it is time the Management Agency steps up and shows more support than they have to date, Prior and Gifford believe.

"The project has run its course and reached an outcome which should allow the Agency to make a decision to take it forward," Prior says.

*Pete Gifford has successfully trained two dogs to detect AFB spores and would now like to advance research to an operational setting.*



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"What I'm getting is nothing though. I haven't got much support from the start and the only encouragement has come from industry."

Neither the AFB Pest Management Board, who make strategic decisions, and King, who oversees day-to-day implementation of the National Pest Management Plan are backing the research into sniffer dogs to a satisfactory level, Prior says.

King, despite his enthusiasm for the initial project, says the Agency must wait for it to be peer reviewed and published before there is "assurance of quality of work and that conclusions are valid".

Thomson is in the process of finalising findings and will then submit the project for peer review and publishing. She expects it could take up to another 12 months before anything is published. The Agency will not fully recognise the findings until that point King says, reinforcing the importance of the peer review process in identifying truly reliable findings.

For Prior and Gifford, two business owners in their own right, this type of apathy and reluctance to fully back their project is frustrating, as they believe the Agency has the most to gain from successful development of new tools in the AFB kit.

"The Agency could take the initiative because they have the ability to go to industry and say, 'we've done this work with dogs, they look really promising, do you want to use levy money to take it forward?' They could do that tomorrow," Prior says.

"It's just not feasible to fund people based inspection of anywhere near the level of hives required to eradicate AFB. We need some new approaches if we are to seriously attempt to meet the (National Pest Management) Plan's objectives."

At ApiNZ, Kos agrees that the Agency's backing will be crucial.

"If it is to go forward, it needs the backing of the Agency. That makes total sense. It has been a really good piece of research, but it is a big job to advance it now and it is a question of where that sits amongst the AFB Agency's priorities," she says.

While King says the Agency is keen to support further research, that is more likely to be in the form of helping gain regulatory approval, as opposed to stumping up any money.

"It would be expensive work and the Agency is not in a position to put large amounts of levy payer funding into such research, but we are in a position where we are willing and able to support research applications to funding providers to progress it," King says.

Decisions, by the Agency, to spend money should not be made on a project-by-project basis, but instead a more strategic approach is required, King says.

"A strategic approach would require the Management Agency to replicate what funding agencies already have for the AFB space. That is, we should quantify the range of AFB research needs, establish our strategic goals and have clear and transparent methods for assessing and prioritising research proposals so that

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we can demonstrate to levy payers that the Management Agency has funded the mix of projects that is likely to provide the best AFB elimination value to levy payers," King says.

For Prior, that there is not already an appropriate process in place for the Agency to make such assessments is frustrating.

"It will be, I am sure, a surprise to many beekeepers that the Agency at the moment has no mandate or budget to carry out research and development, to improve the operational capabilities for AFB detection.

"They are looking for a mandate from industry, but it's not clear what form or shape this mandate should take. MPI and/or the Agency need to come back to industry and clearly show what is needed," Prior says.

### STACKING UP THE NUMBERS

While the Agency's apparent lack of desire to advocate and lead further detector dog research is discouraging for Gifford and Prior, MPI advise that re-using the SFFF fund would be one way to help bring an operational research project to life.

"We would be open to having a conversation with the Foulbrood Detection project team about potential follow-on projects," says Steve Penno, MPI's director of investment programmes.

"SFF Futures is probably the best avenue for this sort of research, as the fund is open to early research that explores new approaches to issues that New Zealand's food and fibre sector needs to address. It is a co-investment fund, so partners need to contribute some of the costs."

Like the initial Foulbrood Detection project, this would likely be in the realm of 50-percent co-funding from industry. Prior believes a contribution of \$60,000 from the Management Agency, along

with support for the concept of AFB dogs, would be enough to get the ball rolling though.

### MORE QUESTIONS

So, despite the enthusiasm for the project's findings from all parties, they appear at an impasse over how to progress it to the next step of assessing AFB sniffer dogs' worth in the hives and beekeeper's sheds.

So, that leaves the Manawatu beekeeper, Prior, and dog trainer, Gifford, at a point where they have invested considerable time and resources into a project for industry good, yet fearing it could all be for naught as it throws up more questions than answers.

Those questions come in terms of the research. "Wouldn't it be good to get to a point where we can actually prove this beyond any reasonable doubt, as to whether dogs are going to be of use?" Gifford poses.

"Wouldn't it be nice to have answers?"

The questions come in terms of support for AFB detector dogs more generally though too, with Prior asking, "is a \$60,000 contribution from the Agency over two years really too much to ask?"

"The question now is, who is going to take this concept forward and operationalise it?"

*Should the Management Agency help fund further research? Should the wider industry step up? Give us your thoughts, email [editor@apiadvocate.co.nz](mailto:editor@apiadvocate.co.nz) 🐝*



American foulbrood detection dog "Wulf" of K9 Search MD successfully indicates on a spore sample during a trial run by Massey University.

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

We'd love to hear it.

Email your 'letter to the editor' to [editor@apiadvocate.co.nz](mailto:editor@apiadvocate.co.nz)



# Varroa Diaries: Gazzabee Honey – Five Treatments a Year



With varroa mite becoming an ever-increasing threat to bee health, we begin a new series of stories cataloguing beekeepers' efforts to best manage the parasitic mite in their hives. First up, we check in with Gary Sinkinson, president of the Southern North Island Beekeeping Group (SNIBG) and owner operator of Gazzabee Honey's 1000 hives in Wairarapa and Manawatu.

**Managing varroa mite has become a pet topic for Sinkinson, both in his own business and also through advocating and educating better practises to fellow beekeepers with his role in SNIBG.**

"I have been acting as a mentor for a lot of people because we have been experimenting a lot and have it pretty down pat now, in terms of keeping varroa out of our hives," Sinkinson says.

He first started beekeeping in 2001, so has had plenty of time to develop Gazzabee Honey's pest management plan.

"We are trying to stick to the registered products to find out what is going to work, in terms of timing and placement," he explains.

With the potential for varroa counts to easily get out of hand, be it because of reinvasion, resistance or other, Gazzabee Honey now use five or six treatments a year. The calendar generally follows a pattern of amitraz (that being the active ingredient of Apivar and Apitraz) in autumn for a "really good knockdown", then a thymol (such as in Api Life Var) in the hive all winter.

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Gary Sinkinson, owner-beekeeper of Gazzabee Honey and president of the Southern North Island Beekeeping Group is happy to help advise other beekeepers, especially on the issue of varroa management.

"It's really good, but not as a front-line treatment. The thymol also helps reduce nosema," Sinkinson explains.

Spring is then started with a formic acid treatment, in the shape of FormicPro.

"If you put that in just before major honey flow, when the bees are going to then concentrate on going out and foraging instead of robbing, then you get 100 percent knockdown, or close to it, and reinvasion shouldn't be an issue at that time. I have tested it through and through and you never find a varroa in your hive after FormicPro. They will only come in on the back of bees robbing."

From there, Sinkinson carries out regular mite monitoring through spring and summer and any apiaries that show a mite count above two mites per 250-300 bees immediately get treated with flumethrin (such as Bayvarol). Then it is back to amitraz in autumn.

He is a big advocate for using amitraz treatments in autumn, due to their superior knockdown, and flumethrin in spring, as opposed to vice-versa as many beekeepers practise.

"By using Apivar in Spring and Bayvarol in autumn, it doesn't knock enough down in autumn to get them through the winter. You need to get rid of the varroa to make the bees healthy, big and strong and fat in autumn, ready for winter.

"You need to get your varroa treatments in well before your queen stops laying for winter. That way she can get at least a round of laying in that is undamaged bees."

The formic treatments used in spring vary in size, depending on the size and strength of the colony and Sinkinson advises beekeepers test various treatment strengths and monitor results to determine what level of formic acid treatment is best for their situation.

Mite monitoring is a key part of the Gazzabee management plan, with Sinkinson advocating for alcohol washes. In his

experience, sugar rolls only shake off around half of the mites that an alcohol wash will.

"You need to know what is in your hives, so mite monitoring is the first step to success. You can't just guess, because you can't see the bloody things."

Too many beekeepers rely on visual inspection of a hive and uncapping drone brood to determine infestation levels, but that is just too unreliable Sinkinson believes.

"The way we are doing it now, we have done for the last four years, and that is monitoring regularly. I usually check eight hives out of 20 or 40 in an apiary.

"I do samples of 200-300 bees and if you have got three or four varroa over that many bees you will never see them in a hive, ever. Even if you have 20 per 300 bees, you will struggle to see them. It is not until they are running across frames and on backs of bees that you see them, and that is when they are 60, 80 or 100 mites per 300 bees. Really, really bad."

Sinkinson is more than happy to share his tips for managing varroa and that advice, along with American foulbrood identification and best practice, has become a big part of the SNIBG's twice yearly field days.

"We have been trying to educate beekeepers for years on this subject. So, if anyone wants to ring me and have a talk about managing varroa then they should," Sinkinson says, adding, "I'm more than happy to."

Gary Sinkinson can be reached on ph: 06 323 0554 or [sinkybees@xtra.co.nz](mailto:sinkybees@xtra.co.nz) 



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# Queens and Varroa Control - We have an open window NOW



BY ANDREW STRATFORD

The window is open for about the next three to five weeks to complete two key tasks in your hives. After that, then it starts to close. So, if you're procrastinating or tired from a busy season, or in holiday mode you may need to do something about it and quickly! Your whole season becomes more straightforward and missing the window will make everything that much more complex.

I'm primarily writing about the two jobs that need – nay **MUST** – be done: 1. Requeening, and 2. Getting varroa control into your colonies.

If you've already done both of these things in the last few weeks, well done, you're on to it. Your colonies going into winter will be stronger and your coming losses fewer. The reverse will be true if you don't make use of the window.

A few facts to remember if you plan to wait until March...

There will be less drones around by March to mate with your virgins. Your existing queens will have started to slow their laying so your colony bee numbers will start to decline. Whereas a younger queen will have a burst of laying after mating. On top of this, varroa numbers roughly double every month so you'll have fewer bees and many more varroa. That adds up to higher losses if you delay. Requeening and varroa treatment done when you have stronger bee numbers mean you'll also be wintering stronger colonies. As long as the colonies have adequate food, you will have more colonies getting through winter.



Andrew Stratford



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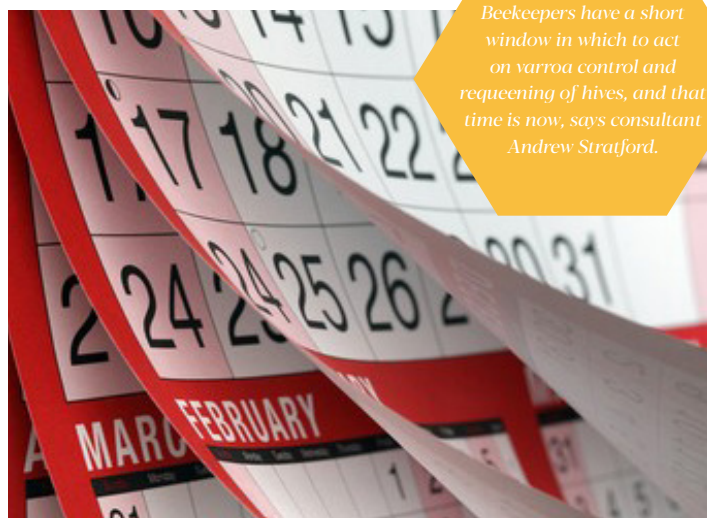


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Beekeepers have a short window in which to act on varroa control and requeening of hives, and that time is now, says consultant Andrew Stratford.



With younger queens you'll have stronger colonies along with similar levels of bees and brood in the spring, meaning less work struggling to get them up to standard or evening hives out. It also means less swarming in a good year as young queens produce more pheromone and the colonies are less inclined to produce swarm cells, even when there's a bit of congestion. This all adds up to easier beekeeping. Smart beekeepers are organised (and have a plan).

So, ask yourself:

- Have I organised to buy cells? If not, you best do something about it now. Or, have I planned my grafting so that I have cells available in the next few weeks? It all gets harder after mid-February. Queens are naturally preparing for winter so cell raising is a lot more difficult.
- Have I purchased varroa treatment and made a plan to have it in all my colonies by mid-February? If not, why not?

It pays to be organised ... What happens if some of our beekeeping suppliers aren't able to supply treatment because staff go down with Covid or couriers can't deliver? You probably don't want to be in that situation. And have you got the funds put aside to pay for the treatment?

The price of missing the window will no doubt show itself later for those that don't make it. Failing queens, higher colony losses, smaller colonies that struggle in spring, less hives available for pollination. There will be excuses, but really getting queen and varroa management right will be a key reason.

So, it's up to you. Have you got a plan? Can you delay some other work to make use of the window? Buy your cells and treatment now instead of later. Good luck!

*Andrew Stratford is an apiculture consultant with 30 years beekeeping experience, including as a current business owner. He forms part of MyApiary's management advisory team.* 🐝



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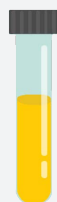
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# Brand New Buildings: 30 Years of Hives, Honey and Hard Work



BY MAGGIE JAMES

Like any beekeeper who has three decades in business, Jeff Brand has seen the ups and downs of the industry. Greta Valley Honey, now based in Burnham, south of Christchurch, is home to not just honey and pollen production but some unique and innovative tools and machinery. Maggie James is given a tour of the facility and learns the history of a diverse, adaptive and innovative beekeeping operation, while Brand outlines a couple of major concerns he has for beekeeping in New Zealand – the growing cost of bureaucracy and the constant threat of American foulbrood (AFB).

**Owner Jeff Brand, and wife Juan Wu are kept busy with their 570 hives, producing honey, as well as pollen, operating their own domestic RMP facility and regularly providing pollination services for one seed grower of radish, Chinese cabbage, and carrots.**

Their hives, plus extraction and packing facility provide honey to their own Greta Valley Honey label, packed in recyclable plastic containers. Supply is direct to retailers, many longstanding clients and with whom they have negotiated freight deals. They have not dealt in bulk honey for eight years and do not have online or gate sales.

Honey produced is clover and manuka, sold as liquid, cream and cut comb in retail packs, with one and two kilogram creamed clover most popular.

Over 30 years operating, Brand has built up a variety of well-maintained and working order second-hand plant, sourced from throughout Canterbury and the West Coast. The couple is competent in dealing with manufacturing engineers in China, where Wu was born, ordering new equipment built to their specifications. However, the Greta Valley Honey sheds were not always this full with plant and machinery, nor honey for that matter.

## GETTING INTO THE GAME

Brand, 50, came into the beekeeping industry 30 years ago when it was struggling.

"So, I am used to the up and downs of the industry and consequently carry as little debt as possible, recycling, innovating and manufacturing as much of our equipment as feasible," Brand says.

"I don't buy the flashiest vehicles on the market. All hive woodware, including frames, I manufacture on site in our workshop."

Brand left school at 15, the same age he became a hobbyist beekeeper, and undertook a joinery apprenticeship. By the time he had completed his apprenticeship at age 19, bees had become his passion. So, in 1992, age 20, he purchased Greta Valley Honey, then based in North Canterbury.

"This was in the days when the Co-op was paying \$1/kg for clover. The Co-op cautioned me not to go near the beekeeping industry, and the banks advised me not to go down that road. I was very determined though. My parents had faith, backing me and – despite negative critique from extended family – they used their house as collateral, enabling me to purchase the business."

The purchase included the trading name, 350 hives, extraction equipment and pollen processing machinery. The vendor was a North Canterbury farmer with 1000 acres and the bees were a side-line. After initially leasing the extraction plant, shop and



Jeff Brand, owner of Greta Valley honey, at home in the business's workshop surrounded by well maintained woodworking equipment.

Photo: Maggie James.



a few other buildings from the vendor, two years into life as a commercial beekeeper Brand was able to purchase the lot.

"The focus of the business for the vendor had been the tourist shop, serving coach tours and pollen production. Unable to man the shop, I promptly closed it and pursued retail outlets in Christchurch.

"Whilst the east coast of North Canterbury was good for pollen production, it is a harsh area for honey and in 1995 there was no honey production in that area. I had to purchase four drums as a packer to supply my orchard shop outlets. It was bloody tough," Brand recalls.

#### MAKING IT WORK

The energetic young beekeeper was nothing if not dedicated though. So, in 1997 he purchased an additional 220 hives and sites in the Selwyn District, to provide more reliable honey production.

"For four years I then worked weekend shifts at Meadow Mushrooms in Prebbleton, and these were also hard years. I gradually pushed honey into more retail outlets and consequently my business base needed to be nearer to Christchurch, my Selwyn apiaries and my family. In 2003 I sold the North Canterbury buildings and land."

That meant a local contract honey extractor and packer was used for the next four years.

"In 2005 I purchased a well sheltered five acres of bare land; previously the site for the Burnham Primary School and all that remains of this facility is the school hand dug well, the sides lined

with hand cut bricks. This now serves as an ideal fire pit for a beekeeper."

With considerable development the site has become the business base ever since. The property now boasts sheds for storing machinery, a well-equipped workshop, family home, grafting yard, and a 255m<sup>2</sup> honey house made from cool store panels, which is well insulated, strong, and cost effective.

For eight years the couple lived in a small flat on the property, saving for a house, and are now relocated with their seven-year-old daughter to a new onsite family home – developments that were not without trial.

"During the Christchurch earthquake, our builder went bankrupt and his workers walked off the job. We had no extraction or packing rooms and no front wall! Fortunately for us, all the wall panelling had been delivered on site. We couldn't afford labour, so we had to finish building the honey house ourselves, and this included me having to learn how to install flashings and guttering. This task took one year for us to complete. We learned later that the money we had paid our builder for materials had not been passed on to his suppliers."

#### INNOVATIVE ADVANTAGE

That setback overcome, these days the centre of the very tidy honey house holds two trucks, drum storage, wax melter, pollen cleaner and drying oven, syrup tank, sugar supplies, forklift, empty supers and much more. The trucks are Ford Traders, one a 1983 three tonne with hive lifter, and a 1995 four tonne. A Kelly hive

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loader was also purchased from the West Coast two years ago, for just \$350.

"On purchase the motor was fine, but it looked like a piece of rubbish and needed intense sanding down and painting," Brand explains.

Among a series of interesting innovations at Greta Valley Honey is an industrial sewing machine to manufacture their own hive strapping.

"Strapping is obtained at no cost from an importer of English caravans, where straps are used to tie down caravans for international transporting. Our hive straps have a heavy metal centre ratchet tie down, made for us, and are capable of tightly securing 2000kg."

An innovator and not one to miss an opportunity, Brand sourced a truckload of Old Man pine logs and planed them to provide material for all hive componentry. Off cuts are used for frames or bottom board risers. Bee boxes are dimensionally accurate and there are zero plastic frames in the outfit.

"We run two brood box hives with a mixture of  $\frac{3}{4}$  and full depth. Hives are overwintered with raw sugar in the top feeder. Syrup feeds are only to top splits. We have never used pollen patties." Brand explains.

"The first honey super placed on the hive is a  $\frac{3}{4}$  depth with Manley self-spacing frames. If the season is a bit light, this box stays on for winter, otherwise a full depth honey super is placed on top of this. Honey supers for extraction hold eight frames, which suits our sudden flows and holds several more kgs of honey per super than nine frames would. Brood boxes hold nine frames."

Apiaries are located within a 60km radius from their Burnham

Jeff Brand and the ideal fire pit for a beekeeper – an old hand dug brick lined well.  
Photo: Maggie James.



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headquarters. Two days prior to honey harvest, supers are escaped. Honey is placed on hive mats on pallets, then driven straight into the honey house and forklifted off the truck.

They deal with the few bees that come in on honey supers, with just one small fanlight window in the dark storage shed, opening very briefly several times daily, to let remaining bees escape outside.

### COST OF COMPLIANCE CONCERNS

Having been in business for three decades, seeing good and bad times in the industry, Brand says the cost of compliance and hive levies is his biggest concern, "and it's getting worse".

Because Greta Valley Honey doesn't export or sell to an export packer, an AP14 Beekeeper Listing is not required. Their domestic RMP is working well, and if they so wished, they are in a good position to change to export RMP using their current documentation.

Brand notes, "The MPI domestic levy is \$470+gst per annum, whereas an MPI European levy is approximately \$1200 per annum. MPI recognise the difference in a domestic levy, but AsureQuality with their auditing appear to have a one-only RMP fee structure.

"We get charged \$1845+gst per audit, the price for a full scope, even though AsureQuality are saving 45 minutes of their time on our audit because we don't have an E-Cert or transport RMP.

"The last two years I have specifically queried, 'why isn't there a difference in audit price?' We are definitely getting ripped off!

"Last year AsureQuality announced it would increase audit fees. I was pleased to note that Apiculture NZ lobbied for the RMP operators to keep fees at their current level and were successful in this. Unfortunately, subsequently, we are now getting charged for non-conformance on an hourly rate, \$165+gst. Previously we were allowed up to three non-conformances in the \$1845+gst fee. What AsureQuality have given with one hand, they appear to have taken away with the other. "

On recent audit Brand had one non-conformance, missing a paper sheet with a few paragraphs regarding storage, processing and packing of bee pollen. Taking only a few minutes to provide this detail, he is certain it would have taken less than 15 minutes for AsureQuality to assess this information. He was charged \$41.25+gst for this non-conformance.

"If AsureQuality can charge this rate for non-conformance, then I should be getting at least the equivalent of their hourly rate of \$165+gst deducted off our shortened timed domestic RMP audit," the Canterbury beekeeper proffers.

"It is very difficult to make a decent living when auditors are dragging big fees out of us."



Greta Valley Honey deal with the few bees that come in on honey supers, with just one small fanlight window on the left of the dark storage shed, opened very briefly several times daily, to let remaining bees escape outside. **Photo:** Maggie James.

Brand is also concerned that the annual AFB hive levy continues to rise. His main concern is that increases are due to incompetent beekeepers who have entered the industry with the thought of making a quick buck, and the likes of him are having to pay for other's ineptitudes.

"Our outfit hasn't had AFB for four years; therefore, I am not reporting it, and in return I am getting regular AP2 inspections."

He would like to see more honey analysis used in operations such as his, as opposed to the regular AP2 visits which are uncovering no AFB.

AFB notifications are a regular occurrence in his, Selwyn District, area and while Brand says it is good to be advised, it is "wearying getting multiple notifications of robbed out hives within 2kms of our sites".

While there is little Brand can do to control AFB in neighbouring apiaries, or the cost of levies placed on his business, he does have some techniques for managing AFB risk.

"As part of our management plan, all hives are on single pallets," he explains.

"As well as being suitable for the Kelly loader, I believe that this helps prevent hive drift which can result in uneven sized colonies and can aid the spread of AFB. Other than pollination for one seed producer, we are non-migratory, and I only rarely ever transfer brood to other hives, and there is minimal exchange of hive gear. All these factors contribute to our current good AFB history," Brand says, before sharing a concern common to many beekeepers.

"I seriously wonder if AFB will ever be eliminated in Selwyn, and the likelihood of transference from robbed out hives is a very worrying thought for our operation."

*Next month, Maggie James takes a closer look inside the Greta Valley Honey sheds, detailing innovative and unique equipment.* 🐝

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# Club Catch Up: Frank Lindsay, Wellington Beekeepers Association



A beekeeper would be hard pressed to have contributed more to their local club and the industry than Wellington Beekeepers Association's Frank Lindsay has. Now into his 70s and having spent 52 years as an apiarist, both hobbyist and commercial, Lindsay has helped educate, advocate and bring beekeepers together, earning him life memberships to three beekeeping bodies and a trove of knowledge.

**A conversation with Frank Lindsay on beekeeping is littered with pearls of wisdom.**

"Once you get to 10 mites per hundred bees the hive is dead, you just don't know it," he advises, and "It takes five years to learn an area, and then you start enjoying beekeeping again. You'll make all those mistakes to start with though."

Then there's the philosophical side of keeping bees to discuss too.

"The thing about beekeeping is, it's a new picnic spot every day. Really great places." And...

"Anybody who's new is enthusiastic, and that's all you need. Awareness and enthusiasm and away you go."

For Lindsay, beekeeping was new in 1970 and, over five decades on, the enthusiasm remains undeniable. He started keeping bees as a teenager. His mother said he would give it up by 70, but that birthday has passed and still he has 60-odd hives of his own, plus plays an important role managing the Wellington club's hives.

For 30 years Lindsay worked for Telecom, while keeping about 150 hives. At 48 years-old, "once the kids had left home", he took an early retirement and moved into full-time beekeeping with just short of 500 hives, before scaling numbers back in later years.

No matter the amount of hives to his name though, Lindsay has had constant heavy involvement in beekeeping through his

local club, and industry groups, even contributing to international research. He – along with wife Mary-Ann who has been a constant supporter and influential in club goings on too – were founding members of the Southern North Island Beekeeping Group (SNIBG), which recently celebrated 50 years advocating for beekeepers. Lindsay's efforts in apiculture have gained the well-healed beekeeper a trio of life memberships, to the SNIBG, the Wellington



*Frank Lindsay, a friendly face around the Wellington Beekeeping Association for over half a century and advocate for apiculture, at one of his many visits to the country's biggest "beehive".*



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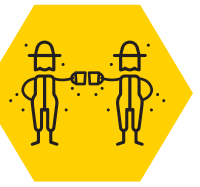
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Beekeepers Association and, former national industry body, the National Beekeepers Association.

Current Wellington club president James Withington is glowing in his praise for Lindsay's contributions.

"He has given a huge amount to the club," the president says.

"It wouldn't be what it is without him. He looks after the club apiary and has them fizzing at the bung, then you have all the work he does behind the scenes. He writes articles, mentors new people, and, if you pick up the phone and say there is something wrong with your hive, he will be there in 15 minutes to look at it. This is all at detriment to his own business and hives."

A former club president himself, on two separate occasions, Lindsay says plenty has changed through the years, not least the amount – and attitude of – members.

"When I started, there were about 40 members, and they were all old men and whatnot. You would ask them a question and they would tell you a few things, but it was often 'oh, you'll find out'."

Not happy with the direction of the club, along with some other younger members, Lindsay said they were given the advice to 'go vote them out'. So they did.

"We decided amongst us who's going to do what, then we went to the AGM and voted them out. The president had been in the role for 30 years at that stage. They all got a shock. It didn't go down well with the older members, but that wasn't a problem for us," he says looking back.

A half century on, the Wellington Beekeepers Association is "totally different", with membership peaking at about 360, and now sitting around 200.

"There are now lots of woman involved and a lot of education goes on. There are members going into schools and talking to kids and that sort of thing. There's generally a focus on that way and a focus on training," Lindsay says.

The life member has been at the forefront of that training.

"He will write an article for a lot of clubs around the country and they will basically tell me, 'we did what Frank said'," Withington says.

"His knowledge bank is phenomenal. I hang around with him and, any day you do that, you feel like a beginner opening the hives for the first time.

"Frank is the guru in our club. He is the go-to person if there is anything wrong with the bees."

It is not just about helping to educate clubmates though, Withington explains.

"He's got 52 years of beekeeping experience and has been a great advocate to the government. He has written a lot of guidance documents around disease control, AFB, varroa. Frank often makes submissions to select committees and occasionally he is asked to front them, especially around disease control in the industry. He does a lot of lobbying governments to ensure the best for the industry."

After attempting to fully detail the long involvement of Lindsay with the apicultural industry, the current president of the Wellington club concludes with a simple summary earned through five decades of giving back.

"He is one of the most amazing guys there is." 🐝

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# Droning on again...



BY DAVE BLACK

With “queen problems” reported as a leading issue contributing to beehive loss, Dave Black asks, are we paying enough attention to the other half of the equation: our drone stocks? The well-read Bay of Plenty beekeeper seeks out research on the subject, uncovering some intricacies of the drone bee and knowledge for better hive management.

However you cut it, in New Zealand beekeepers report around 10% of colonies as winter losses each year. Every year 30-35% of those lost is described as attributable to ‘queen failure’<sup>1</sup>. Managed queen replacement to maintain hive performance is common practice among New Zealand beekeepers, especially large operators, of whom about half report a regular requeening programme. That’s besides the usual loss as supersedure, and what about the lack of vigour, diversity and cohesion that provides an opportunity for whatever is going around to, er, come around. We have to wonder whether something can be done about that. Is that just Nature, was it ever thus? Even if it is, can we not still try to improve the odds and leave less to chance? Can we reliably tell if a queen is failing?

Many beekeepers, especially the ones who can’t find their queens, use brood pattern as a proxy for queen quality. A ‘poor’ brood pattern is clear, defined as more than 20% of the cells vacant<sup>2</sup>, and is the queen’s fault, whereas a ‘good’ pattern is... well, better than a poor one. A US study a couple of years back pointed out that there wasn’t any reason to suppose we could be quite so definitive<sup>3</sup>, plenty of things disrupt brood laying. They measured queens from 76 ‘poor’ and ‘good’ colonies for head width, thorax width, and live mass, and the percentage of live sperm out of the total sperm counted. None of these measurements was reliably associated with either pattern, and nothing else seemed any different either. In a second year they also swapped queens over, that is, the assessed ‘good’ queens were introduced into

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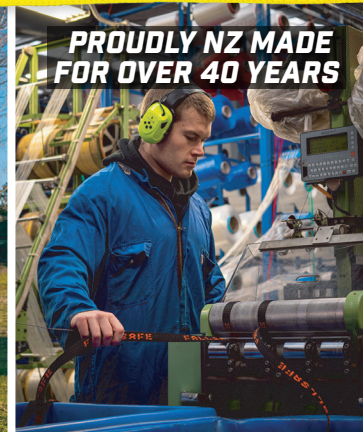
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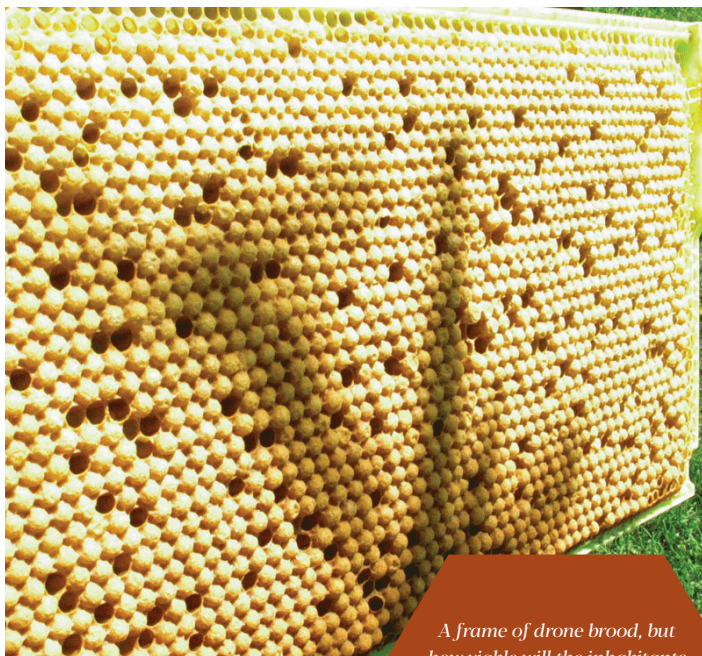
the 'poor' colonies, and the 'poor' queens went to 'good' colonies. Counterintuitively, the ones with 'good' patterns got worse, and the 'poor' ones got better. It looks like brood patterns could be a team game and not a royal prerogative.

The individual attribute we use most to choose a good quality queen is probably size. We mean weight. While science can't point at any particular dimension and it's true the studies differ in detail, the overall empirical conclusion is that weight correlates closely with ovary mass and the number of stored sperm. Biggest is best. Unable to look inside a queen, the only useful internal metric the rest of us have is the colour or size of the spermatheca which can only be gauged posthumously. It's worth noting that these are usually only half full<sup>4</sup>, even in 'good' queens.

Half-full of what is the obvious question. Very little is known about honey bee sperm quality, perhaps because it's unusual compared to other domestic animals and needs distinct study techniques<sup>5</sup>. Its structure makes quite hard to count and it's difficult to spot abnormalities. It tends to 'clump' which makes extrapolating a small counted area to a larger volume perilous. There isn't much of it so measuring density is not straightforward. Even in a healthy drone the number of sperm produced may vary according to body weight, age, season, and genetic factors so the range of results is wide. Sperm production seems to peak in large, autumnal, 21 day old drones, but good estimates are difficult to achieve.

Even if we can count it, is it healthy? Sperm viability can be assessed but we have to take account of a natural attrition as it moves from being kept alive by its seminal fluid, mixed with competing males' seminal fluid, to support in spermathecal fluid. There is good evidence for 'cryptic female choice' with spermathecal fluid differentially favouring the success of particular types of sperm. So far other important aspects of sperm health have defied routine examination.

As little as 5% of all the sperm the queen receives from multiple males ends up stored<sup>6</sup>, for years, in the spermatheca, and yet it's central to the survival of the colony. It's easy to get tied up by what



*A frame of drone brood, but how viable will the inhabitants be in later life?*

*A drone and queen bee mating on the wing. While beekeepers pay special attention to the queens that keep their hive ticking over, should drones be given more attention for the critical contribution they make to hive health and longevity?*



we don't know. A great deal of thought goes into the production of good queens, and despite the knowledge gap about the male contribution, that has to be matched by producing good strong drone mother colonies. Experience tells us what these have to be like; our get-out-of-jail card is lots of big, diverse drone mother colonies. Headed by older queens, with good stable weather and an abundant, continuous pollen supply we can have drones that contribute 5% of something good.

*Dave Black is a Bay of Plenty based hobbyist beekeeper who now works in the kiwifruit industry. He has a degree in environmental science and for the past 25 years he has been reading and writing about bees and beekeeping. His essays are available at [www.beyondbeebooks.substack.com](http://www.beyondbeebooks.substack.com) 🐝*

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# Handbook a Trove of Bee Planting Best Practice

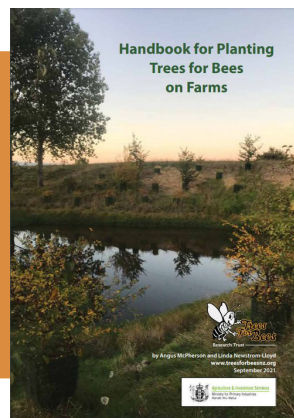


The knowledge gained from 10 years of working with beekeepers, farmers and scientists has gone into the recent release of the comprehensive *Handbook for Planting Trees for Bees on Farms*, with beekeepers and their honey and pollen gathering workforce set to be the big benefactors from the free publication.

The Trees for Bees Research Trust recently released a free PDF version of the book, available via their [website](http://www.treesforbees.co.nz), along with a limited run of softcover books.

While the Trust's work has always been freely available, the new release collates into one manual key information on 10 different types of plantations: riparian protection; land stabilisation; shelterbelts; paddock shade and shelter; native bush biodiversity; roads, avenues, and laneways; amenity; edible plantations; apiaries and beekeeper yards; and mānuka plantations. Each

A new Trees for Bees handbook is freely available in PDF.



plantation type is described with examples, illustrations, advice, and plant lists. Thus, making a range of planning and planting information easily accessible.

"It's a useful tool to assist farmers support the bees, and incorporate into their on-farm planting for biodiversity and other environmental benefits that customers are now demanding," says Dr Angus McPherson, Trees for Bees farm planting adviser and trustee.

Since 2011, Trees for Bees has planted over 75,000 bee forage plants in 32 demonstration farms throughout New Zealand.

"We show farmers how to incorporate a low-maintenance bee forage planting plan into planting they're already establishing to increase production and improve their farmland," McPherson says.

"We aim to help build more resilient and sustainable farms by taking the best possible care of our star performer – the honey bee."

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# Honey Bees Increase Social Distancing When Facing the Ectoparasite Varroa Destructor



In the midst of a global pandemic, when humans have embraced the concept of social distancing, a study has revealed that honey bees use a similar tactic to combat the parasitic varroa mite.

The **international study**, led by a team of researchers from England and Italy, demonstrated that honey bee colonies respond to infestation from the harmful varroa mite by modifying the use of space and the interactions between nestmates to increase the social distance between young and old bees.

"Here we have provided the first evidence that honey bees modify their social interactions and how they move around their hive in response to a common parasite," says co-author Dr Alessandro

Ciniol, University College London Centre for Biodiversity and Environment Research.

"Honey bees are a social animal, as they benefit from dividing up responsibilities and interactions such as mutual grooming, but when those social activities can increase the risk of infection, the bees appear to have evolved to balance the risks and benefits by adopting social distancing."

Among animals, examples of social distancing have been found in very different species separated by millions of years of evolution.

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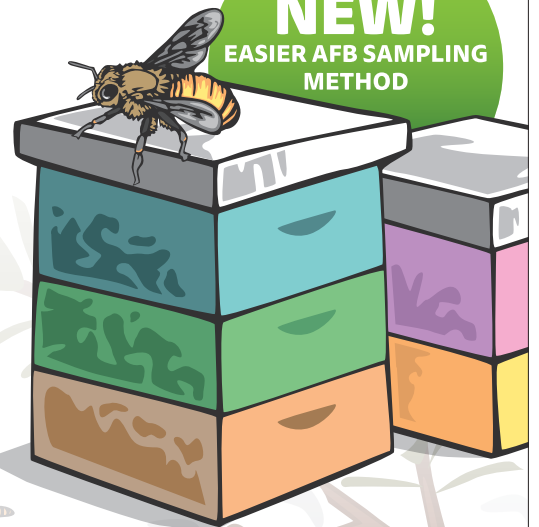


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Baboons are less likely to clean individuals with gastrointestinal infections, while ants infected with a pathogenic fungus relegate themselves to the suburbs of anthill society.

The new study evaluated if the presence of *varroa destructor* in honey bee colonies induced changes in social organisation that could reduce the spread of the parasite in the hive.

Honey bee colonies are organised into two main compartments: the outer one occupied by the foragers, and the innermost compartment inhabited by nurse bees, the queen and brood. This within-colony spatial segregation leads to a lower frequency of interactions between the two compartments than those within each compartment and allows the most valuable individuals (queen, young bees and brood) to be protected from the outside environment and thus from the arrival of diseases.

By comparing colonies that were or were not infested by the varroa mite, the researchers found that one behaviour, foraging dances, that can increase mite transmission, occurred less frequently in central parts of the hive if it was infested. They also found that grooming behaviours became more concentrated in the central hive. The researchers say it appears that overall, foragers (older bees) move towards the periphery of the nest while young nurse and groomer bees move towards its centre, in response to an infestation, to increase the distance between the two groups.

"The observed increase in social distancing between the two groups of bees within the same parasite-infested colony represents

a new and, in some ways, surprising aspect of how honeybees have evolved to combat pathogens and parasites," says lead author Dr Michelina Pusceddu of University of Sassari, Italy.

"Their ability to adapt their social structure and reduce contact between individuals in response to a disease threat allows them to maximise the benefits of social interactions where possible, and to minimise the risk of infectious disease when needed.

"Honeybee colonies provide an ideal model for studying social distancing and for fully understanding the value and effectiveness of this behaviour." 🐝



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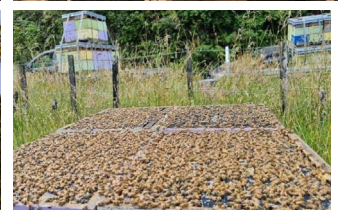
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# Productivity and the Role of the State



BY IAN FLETCHER

Apiculture industry consultant and former top bureaucrat Ian Fletcher gives his monthly *“Views from Outside the Apiary”* as a non-beekeeper but deep thinker on the plight of New Zealanders.

**When Christopher Luxon made ‘productivity’ a theme of his early days leading the National Party last month, I was both surprised and pleased. Pleased, because (as I’ve written previously), New Zealand’s poor productivity is a growing tax on our future, just as we face problems like our aging population, climate-driven economic transition, housing, poor and outdated infrastructure, and many others.**

We’re not the only country in this predicament, but our record over my lifetime has moved us from the very top, to well below half way in the OECD group of developed countries. The Productivity Commission [website](#) is good on this. Have a look. It’s sobering stuff.

I was surprised because politicians don’t like talking about productivity. It means facing up to our shared shortcomings. It means dealing with complex and seemingly intractable problems. It means calling for expensive and time-consuming solutions. No snappy sound bites here.

Luxon went on to focus on education. That’s certainly an issue in New Zealand, where our educational record is very mixed: young people from relatively affluent communities go to good schools and do well. Others, from less affluent communities, struggle to even engage. One former Secretary of Education explained to me that New Zealand schools had an unusually wide gap between the top and the bottom. So, simple quick-fix solutions were especially unhelpful. Yet that seems to be what Luxon has called for – he talked of a shift from child-led to teacher-structured teaching. Quite simply, good for some, but not others.

## WHAT ELSE COULD WE DO TO IMPROVE PRODUCTIVITY?

Whatever we do needs to reflect climate-related goals, as well as the basic facts of our geography: New Zealand is long and narrow, with lots of mountains and quite a low population in many places. We’ve done better than many on broadband roll-out, but we need now to think about physical infrastructure. A big move to electric vehicles will still leave growing urban congestion and also put an extra load on the electricity system. Properly priced (or taxed) internal

air travel ought to be more expensive. The rail system offers solutions for congestion, climate-compliant travel and getting a lot of freight off the roads. Coastal shipping seems to have been neglected too.

Here our ideology trips us up though.

Dealing with all this means accepting that we will need some subsidisation, and some coordinated planning. Nothing wrong with either. Only the state is big enough to tackle these big whole-of-geography questions. Only the state has deep enough pockets to tackle associated project risks. After all, our current road, electricity and rail networks are all still essentially those built



*Chris Luxon’s efforts to address productivity early in his tenure as National Party leader have both “surprised and pleased” former top bureaucrat Ian Fletcher.*



by the state (and the preceding provincial governments) between 1860 and the 1984-88 Roger Douglas period of privatisation and fragmentation. We need to get over that and get back to seeing a proactive role for the state.

Minimum wages get a lot of airtime in productivity debates too. We know they don't raise unemployment (good), and there seems to be a link between higher wages and the adoption of new technology (also good). New Zealand has tended in recent decades to solve skill and wage pressures through immigration, which lifts economic activity (there are more people) but not productivity. Less migration and higher wages would perhaps be a good idea. Otherwise, minimum wages shift the allocation of today's company revenue between owners/managers and workers. Given the pernicious effects of inequality in our society, that's a good thing. It just doesn't really affect longer term productivity.

Regular readers will know that I generally advocate a bigger role for the state, and higher taxes. Why? There are two main reasons – one general, and one peculiar to New Zealand. Neither is ideological. The general one is that western societies have tended to demonise the role of the state and idolise the private sector. It's just wrong, as people like renowned economist Dr Mariana Mazzucato have shown.

The state has deep pockets and a risk appetite unmatched by the private sector, which tends to appropriate public value for its own ends. In Europe this view is not that controversial; in Anglophone countries we tend to still believe the Thatcher-Reagan world view, that small government and limited government does least harm. I think that's just wrong.

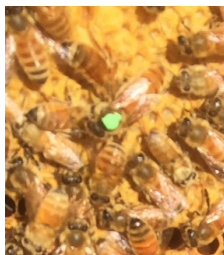
In New Zealand's case, the need for the state to play an active, creative role in the economy is even greater. No private company is big enough to do anything meaningful at a national scale. All our companies are small or – at best – medium sized. Air New Zealand and Fonterra both don't count: they are emanations of the state, each with special, closely defined role. They can't go broke.

There are two other consequences of all this: firstly, there should be significantly more funding for research in New Zealand, and secondly, we need to reform our supine and fearful public service. But that's a story for another day...

*Ian Fletcher is a former chief executive of the UK Patents Office, free trade negotiator with the European Commission, biosecurity expert for the Queensland government and head of New Zealand's security agency. 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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**Franklin Beekeepers Club:** 137 Sim Road, Paerata, Auckland 2580. Meetings on second Sunday of the month, 9.45am start. [www.franklinbees.co.nz](http://www.franklinbees.co.nz).

**Hawkes Bay Bee Club:** Pakowhai Hall, Pakowhai Road, Pakowhai (opposite the shop) from 7pm on the first Thursday each month (except January).

Email: [beekeepershbinc@gmail.com](mailto:beekeepershbinc@gmail.com)

**The Buzz Club Otaki:** Waitohu School Hall, Te Manuao Rd., Otaki. Meetings every 3. Wednesday of the month, 7-9pm.

Contact: [thebuzzclubotaki@gmail.com](mailto:thebuzzclubotaki@gmail.com).

**Nelson Beekeepers Club:** Waimea Lounge, A&P Showgrounds, Richmond. Meets first Tuesday of the month (except Jan) 7-9pm. [www.nelsonbeekeepers.org.nz](http://www.nelsonbeekeepers.org.nz), email [tasmanbees@gmail.com](mailto:tasmanbees@gmail.com), ph 03 548 6220

## UPCOMING EVENTS

**Apiculture New Zealand Conference and Trade Exhibition:** "Sharing Knowledge, Sharing the Load for a Better Future". June 30-July 1, Te Pae Christchurch Convention Centre. Registrations open now:

[www.apinz.org.nz/apinz-conference](http://www.apinz.org.nz/apinz-conference)

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## Scholarship Winner Announced

Canterbury beekeeper Alyssa Wilson has scooped this year's Apiculture New Zealand Ron Mossop Youth Scholarship. The 17-year-old, who recently began working for James and Richelle Corson at Gowanleagold Honey, will receive \$2000 to support training and set-up costs as she undertakes the New Zealand Apprenticeship in Apiculture over the next two years. "She's clearly not afraid to get stuck in and learn as much as she can. With a strong work ethic and a real interest in bees, she is going to be an asset to our industry," says scholarship judge Neil Mossop.



*Apiarist's Advocate* is brought to you by Patrick & Laura Dawkins, Marlborough beekeepers.

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