

ISSUE 18, JANUARY 2021

# APIARIST'S ADVOCATE

News, Views & Promotions – for Beekeepers – by Beekeepers



## Heat Treatment

We meet  
the Hivesite team



The Hivesite team, from left,  
Vijay Prema, Alistair Bell,  
Gareth Bell and James Emslie.





# Heat Treatment



Beekeepers interests were piqued when a product promising thermal hive treatment for varroa mite scooped two awards at the national agricultural Fieldays in July. Now, as the team behind Hivesite - Gareth Bell, Vijay Prema and James Emslie - move through a key trial period, we caught up with them to find out how it works, when beekeepers might expect to have the technology on their hives and we uncover the potential for added benefits over and above varroa control.

**Using heat to treat varroasis by either killing varroa mites or interrupting their reproductive cycle is not unique, with thermal treatments having been used in Europe for years. However, adapting the technology to work remotely and in a commercial setting in New Zealand is, and that is what drives the Hivesite team.**

"Some of the existing heat treatment solutions are just a bit bulky, labour intensive and require a power source," explains Prema.

"So, our whole approach has been a spiral of reducing the concept down to being more practical and viable in a commercial space."

That has resulted in the creation of the current Hivesite setup. Designed to fit on a pallet holding four hives, it provides a heated base pad for each hive, insulated excluder and solar panels fitted to the hive roofs capable of providing power to a battery unit off which all four units run.

## GETTING HOT IN HERE

At 41 degrees Celsius the varroa mite will die or its reproductive cycle will be severely compromised, while bees will tolerate the heat. Hivesite heats the brood area of the hive to that temperature for two hours every three weeks, to interrupt fresh lifecycles of the mite.

"We are realistic that we are not going to kill every mite. It is about maintaining the mite level below a threshold that will cause issues in the colony," Emslie says.

Limiting the bees' exposure to extreme heat is important and hence the intermittent treatment.

"Our testing has showed the heat is concentrated in the centre part of the brood box, so there are areas where the queen can escape to. You do see bearding on the outside of the hive when we enable the heat, and there will be some mites on those bees that come outside, but we are targeting the juvenile mites in the brood to disrupt their lifecycle," Prema says.

International research has shown that exposure to high heats can cause queen failure.

"You want to keep her in the 30s (degrees Celsius), so it is important to allow her to move to a cooler part of the hive," Bell says.

"We tried a competing product under the hive and it was making all sorts of noises and we didn't feel all that comfortable. With Hivesite we know it inside out and know all the temperature profiles. We monitor it constantly, can see it through a web page and we know exactly where the temperature probes are at.

"We have also done thermal modelling with a thermal camera. We are well-trained engineers so we like to know what is going on."

## THE IDEA

Cameras have played a key role in the development of Hivesite, and it was with their use that the idea for a thermal varroa treatment began about 18 months ago.

Bell's beekeeping friends, Tim and William Stewart at Silver Fern Honey in the Waikato, had mentioned to Gareth's father Alistair they were treating for varroa, but had limited understanding of what was going on inside their hives. So, Alistair, a hobbyist beekeeper, called on the help of his son with expertise in remote cameras, plus former co-workers and friends Emslie and Prema. Together they proposed using a camera to view activities inside the hive walls.

"Then after some further conversations with beekeepers it became obvious that it would be better if it could actually kill the mites," Bell explains.

"James had heard about a thermal treatment overseas and we have since bought one."

So began the processes of refining the treatment to New Zealand conditions, leading to major recognition at Fieldays 2020 in July when



*The Hivesite team, from left, Vijay Prema, Alistair Bell, Gareth Bell and James Emslie.*

Hivesite made headlines, scooping the Grassroots Prototype award as well as the James and Wells Innovation award.

"That gave us a bit of a boost in confidence and it was good to get some early recognition for what we are doing," Prema says.

### THE TRIAL PERIOD

Spring saw the next phase of the project, an infield trial in the Waikato to compare 12 hives treated with Hivesite thermal treatments to conventionally-treated hives.

Mite washes are being completed monthly to determine the effectiveness of the treatments and the trial will continue through until at least spring 2021, by which time they hope to have a clearer picture of how Hivesite stacks up.

"Our initial tests have shown it does kill a lot of mites, just from checking mite drops, and it doesn't kill the bees. To really prove the long-term efficacy and make comparison to chemical treatments as to overall hive health, that is what we are trying to achieve with the trials we have started recently," Prema says.

It is not all about varroa control though and part of the trial will involve identifying any added benefits thermal treatment could provide.

"For example, could it improve productivity of bees? There are studies that show the bees live several days longer when heated like this and part of our trial will be to monitor that. Is there a difference in productivity? Is there a difference in the amount of hive loss? It is not just about treating varroa," says Prema.

On top of that, there is also the added benefit of the remote

solar power source created through Hivesite's technology, which could be incorporated with other remote hive technologies.


### THE WORK CONTINUES

While the Hivesite engineers work through their current trial to build "accurate data", it is difficult to put a timeline on when a finished product might be available to the industry. Winter of 2022 would be the earliest point though, allowing them to further adapt Hivesite through the next beekeeping season.

Creating a product that is not only beneficial to hive health, but also practical for use in a New Zealand commercial setting has always been the focus of the engineers behind Hivesite. Therefore, the continuing refinement of the product will mean not only maximising the benefits it can offer, but also creating an affordable product.

"We have all previously been involved in a big automotive company and they all want costs down, typically 10 percent each year," Bell says.

"Then, they all want products which will work outside, in a large temperature range. So, we are used to working to that environment and we know about cost sensitivity and longevity."

So, Bell and his father, Prema and Emslie will continue to refine the product. They will seek to gain a better understanding of the effect of heat treatments on varroa mites, any additional impacts on the hives, and aim to reduce costs in the coming years, with the hope of not only piquing beekeepers' interests, but also providing practical solutions to some of their biggest problems. 

## MYAPIARY ADVISORY SERVICES TO EMPOWER YOUR BUSINESS

NEW

### A one on one coaching program

designed to increase your financial understanding and expand your business management skillset.



**DARREN  
BAINBRIDGE**  
SYSTEMS  
ADVISOR



**ANDREW  
STRATFORD**  
APIARY  
ADVISOR



**JULIAN  
SO**  
FINANCIAL  
ADVISOR

### Consisting of:

Business health check and developing a personalised business and hive management plan.

Put in place the tools needed to better monitor and measure your businesses performance.

Visit us at: **MyApiary.com**  
Call us at: **+64 7 3910039**



**MyApiary™**  
SMARTER BEEKEEPING

# time to get honey testing.

**hummm™ makes it easy!**

**Now's your busy time so make life easy.**

Order and manage your honey tests in a few simple steps!

Powered by Gribbles, a leading NZ provider of veterinary and food testing, **hummm™** lets you test, manage and share your results quickly and easily.

Hop onto our revolutionary, personalised **myhummm** portal, and you'll enjoy:

- Free testing supplies
- Free sample shipping
- Secure credit card payment
- A large range of tests available, including IANZ and MPI approved tests for export

**Register online at [myhummm.co.nz](http://myhummm.co.nz)**





# Volume Up, Value Down for Honey Exports



Beekkeepers and honey traders are having to take the good with the bad, according to the Ministry for Primary Industries' (MPI) latest Situation and Outlook Report.

**Released in December, the report detailed an increase in export volume in 2020, but a reduction in the per-kg price commanded. Since February export volumes are well above the five-year average and this is expected to continue in the next six months, leading to a predicted total value of \$470million for the year ending June 2021.**

That would be a 10.7 percent increase on the \$425million of honey sent offshore in the previous reporting year.

An increase in demand for honey during the global pandemic has driven the increase in total value, but the report also states that beekeepers are now more willing sellers.

"Stocks of non-manuka honey have been building up as beekeepers were unwilling to drop their prices, because in many cases this would mean selling honey below their cost of production. After another good production year in 2020, stocks have built up even further and beekeepers have now begun to accept lower prices to reduce their stock levels," the MPI report for December says.

That has seen the average price for a kilogram of honey fall from \$44 in 2019 to \$41 this year, with expectations it will continue to drop in coming years.

Prices for monofloral manuka honey have remained stable at around \$55/kg, while the prices for multifloral manuka and non-manuka honey are both dropping, below \$30/kg and \$20/kg respectively.

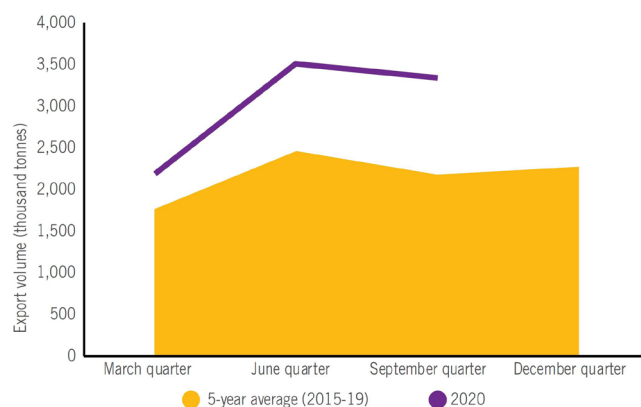
Apiculture New Zealand (ApiNZ) chief executive Karin Kos says the report highlights the "upside and downside" of the current state of the honey industry.

"Between April and August the export volumes were 41 percent higher than last year. That is slowing now, but there was still about a 14 percent increase over September and October. So, New Zealand honey stocks are moving and New Zealand beekeepers are keen to move honey stocks," Kos says.

"The downside is the reduction in prices. The prices are still very low for those selling non-manukas and multifloral manuka honey. Profitability is an ongoing concern for beekeepers and it has been for the last year and a bit. I am nervous about this season."

Early indications on the current honey season point towards an almost certain drop in production from the previous harvest. Despite this and the increase in export volume, there are still large

**Figure 30: Honey export volumes in 2020 versus 5-year average**



Source: Stats NZ.

amounts of honey stored in New Zealand, with ApiNZ estimating the total held to be around 25,000 tonnes.

There is a balancing act to be performed by the New Zealand honey industry when it comes to selling honey internationally, the ApiNZ chief executive says.

"We have to retain the value over volume story. All of the primary sectors have the same issue. How do we move our product from commodity to value? Volume to value.

"We have achieved that with manuka, particularly with monofloral. I keep banging on about marketing the other monoflorals and we have started that with the New Zealand Honey Story, but we probably need to understand our markets a bit more. Define where the opportunities are." 

## Want to tell beekeeping stories and earn some extra income?

Apiarist's Advocate is  
searching for freelance  
writers to contribute to  
our monthly eMagazine.

If you have skill with  
the written word and an  
understanding of beekeeping  
and the apiculture industry,  
then we want to hear from you.

**Ph. Patrick 027 383 7278 or email  
editor@apiadvocate.co.nz**

# To Test or Not to Test?



With several countries tightening restrictions on New Zealand honey crossing their borders, we asked key stakeholders in the honey industry if beekeepers should be undertaking greater testing of their produce, and who might carry the weight of any additional testing costs.

**Communication is key and knowledge is power when it comes to honey testing, those at the coalface believe.**

With China requiring specific tests for American foulbrood (AFB), Japan for glyphosate and Europe's consistent high standards, producers, packers and exporters need to be increasingly aware of requirements.

"The thing we can control is, if there is an issue such as AFB spores, then we need to be as proactive as we can to do what we can to manage it," Apiculture New Zealand (ApiNZ) chief executive Karin Kos says.

"That is as much as you can do to manage concerns from an exporter's perspective, appreciating there is an extra cost and hassle, but the way of the world is extra testing. We have seen it with glyphosate, with AFB. It is not something that is going to disappear from our world unfortunately."

John Hartnell has been exporting honey for over 30 years through Hartnell & Associates and has seen significant change in

the information requested by international buyers.

"In the old days we used to send them a sample and they would say 'yes' or 'no'," Hartnell says.

"They don't do that anymore. Now, it is about providing a full screen of everything required. We do about \$1200 of testing per [shipping] container. All beekeeping industries around the world are operating under the same requirement."

At Manuka Orchard in the Bay of Plenty, owner Logan Bowyer stores, prepares and offers honey for sale for beekeeper clients and, in order to cast a wide net, a range of test results are carried out on each batch.

"We want to get as many buyers interested in a batch of honey as we can and give them confidence to put a price in without a lot of mucking around. That means showing them results for glyphosate, AFB, aerobic plate counts, yeasts and moulds," Bowyer says.

"That cost is carried by the beekeeper and we like to see that not as a cost to the beekeeper, but a value-add."





That value-add can manifest itself when purchase offers are made, Bowyer says.

"I have seen genuine offers coming in for honey, from the same buyer and for the same batch, but higher one week to the previous because more testing data has been uploaded. They have more confidence to put a bid in."

Having greater knowledge of their product through testing should be high priority for beekeepers, Bowyer believes, not just to make it more appealing to potential buyers but to give the producer greater power during negotiations. Individual drum testing can be expensive, but if a buyer carries out testing and rejects honey or reduces the price offer on a drum, it can hurt even more.

"I have got so many phone calls from beekeepers who lost out because they sold their honey and didn't know the product until it got tested. That is the choice you make if you want somebody else to pay for your testing. If you do nothing else you gain knowledge, and knowledge is valuable when making a deal with someone else," Bowyer says.

Individual drum testing may become unnecessary for a beekeeper if it proves their extraction and processing system to be adequate and able to equally homogenise entire batches. Or, it may identify a problem and then spending is better allocated to upgrading plant, rather than further testing, going forward.

At Hill Laboratories key account manager for honey Kim Murrell says it has been a tough run for beekeepers recently with both

Japan and China tightening requirements for glyphosate and AFB testing respectively.

"It is hit after hit when the change comes in regarding glyphosate, then you add AFB on the back of it," Murrell says.


"There is something every season, but to have one off the back of the other is pretty challenging and frustrating."

Murrell expects demand for residue testing to increase as more markets raise concerns, but Hill Laboratories are aware of the increased costs which this puts on producers.

"Honey is one of the most highly tested products and it all comes at a cost. Based on the changing requirements, we have reviewed our prices and reduced them to try and support the industry. I would suggest that, unless it is specifically requested or the beekeeper is concerned, perhaps because there has been use of glyphosate in the area, then I wouldn't necessarily go out and recommend they get all the available tests done in one go."

Kos says at ApiNZ they recommend that beekeepers and packers communicate around testing requirements to determine at what level and by who each type of test should be conducted.

"They need to be really clear on their expectations of one another," Kos says.

"What are the expectations as a packer? So, the beekeepers understand, but equally so the marketers and packers do too. There are a lot of compliance costs on beekeepers and with the pricing, the way things are going, it is a tough market out there. I would urge both to be talking to one another." 

## NEED MORE FROM YOUR **HONEY?**

### *Battling high moisture or fermented drums?*

**WE CAN HELP!**

**TALK TO US ABOUT BULK HONEY STORAGE & SERVICES:**

- Growth storage
- Chilled storage
- Ambient storage
- Chilled super storage
- Honey sampling
- Honey moisture reduction
- Fermented pressure release
- Two-point HMF filtering



**Call Logan or Tania Bowyer**

**Phone: 027 6677 588**

**Or email: [thehive@manukaorchard.com](mailto:thehive@manukaorchard.com)**

**[www.manukaorchard.com](http://www.manukaorchard.com)**

# Beekeepers to Pay Higher AFB Levy



Beekeepers will be required to pay more in their annual levy to fund the agency responsible for managing American foulbrood (AFB) in New Zealand's beehives, the Management Agency National American Foulbrood Pest Management Plan announced in December. The decision came following consultation with beekeepers which resulted in an exactly 50-50 split of those "for" and "against" the increase, and with owners of larger numbers of hives firmly showing opposition to increased levies. So, how did the Agency reach its decision to increase the levy on hive owners?

**When beekeepers next AFB levy falls due on June 1 2021, they will be required to pay \$1.70 per colony owned, an increase of 35 cents on the same time last year, plus the base rate of \$40.**

In the Levy Order which governs the Agency, there was provision for the per-colony rate for 2021-22 to be set at \$1.99, but a review of the budget for that year saw the Agency take the revised figure of \$1.70 to beekeepers for consultation in September.

Agency national compliance manager Clifton King says the original \$1.99 rate was set to correct underfunding of the Agency, but the revised rate of \$1.70 – despite adding increased compliance cost to beekeepers – was reached with the honey industry's struggles in mind.

"We are well aware of the financial pressure that certain parts of the beekeeping community are under and our obligation to ensure that beekeepers are receiving value for money, but to achieve

## HD Process NZ

Specialists in sanitary process equipment

# Honey processing equipment

### Pumps

- ▶ Flexible impeller
- ▶ Progressive cavity
- ▶ Lobe



### Filters

- ▶ Rotary self cleaning
- ▶ Bag filters

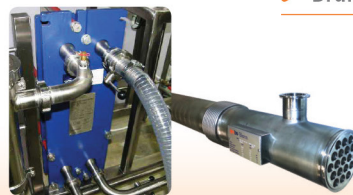


**NEW**

Filter with heating and agitation helping wax removal

### Heat exchangers

- ▶ Shell and tube
- ▶ Plate and frame



### Extraction and processing

- ▶ Honey looseners
- ▶ Extractors
- ▶ Drum filling



10 Maurice Road, Penrose, Auckland  
Ph: +64 9 580 2520 Fax: +64 9 580 2525

Please enquire to: [james@hdprocess.co.nz](mailto:james@hdprocess.co.nz)  
or visit: [hdprocess.co.nz](http://hdprocess.co.nz)

PUMPS | FILTERS | HEAT EXCHANGERS | EXTRACTION | PROCESSING



value for money you need to set the budget at the right level," King says.

"It's about finding the right balance and that is something we are striving to achieve."

The national compliance manager argues that balance has been found, with consultation resulting in an even split of those for and against the increase.

The consultation round was the first time an online survey, hosted by Survey Monkey, was offered as an option during Agency budget consultation. Ninety-five responses came via the new method, and nine written submissions were returned. They were analysed by the independent company Logic Partners who returned a publicly viewable report to the Agency.

The 104 responses are equivalent to around one percent of New Zealand's total beekeepers.

"Overall, I was quite pleased with the feedback. It showed strong support for the investments in those areas [as outlined in the 2021-22 budget], but the support wasn't as strong for actually paying more levy. That is understandable. Everyone would like more AFB control for free, but that is not the world we live in," King says.

The online survey appears to have made the consultation process more accessible to beekeepers, with the 104 people in total responding a larger increase on the 11 beekeepers who did so when written feedback was the only method used in 2018. The online survey had a section where respondents could type customised feedback.

"We want to make it as easy for beekeepers as we can. Some beekeepers have chosen just to select radio dials to indicate their level of support or disagreement, others have elected to do that and provide feedback," King says.

All nine respondents who provided written submissions opposed the levy increase. King says submissions are not weighted though and the same level of consideration was given to written submissions, some of which were quite detailed, as to those who completed the online survey. Thus, the written submissions did not sway the balance and lead to the rejection of the proposed levy increase.

That even weighting also extended to the level of hive ownership, with those opposing a levy increase owners to considerably more hives than those who favoured a raise. However, that fact did not tip the balance towards the Agency maintaining the status quo either.

"It is about AFB control and the benefits of AFB control accrue on a common basis. They accrue to all beekeepers and the beekeepers with the most hives accrue the most benefit to AFB elimination," King says of the decision to view feedback from all beekeepers, no matter their level of hive ownership, equally.



*Ropey brood,  
a symptom of AFB  
infection.*

"It is a consultation not a vote and the fundamental question was around spending the right amount of money on AFB control, as opposed to being a question of 'do you want to pay more or less levies?'"

The levy increase is expected to bring in, approximately, an additional \$332,000 of revenue for the Agency, of which \$170,000 has been earmarked for a review of the Levy Order. That review is required every 10 years, but the Agency does not put funds aside annually in anticipation of the cost.

King says that would be the "ideal" way of preparing for the review, but it has not been practical.

"The Agency was underfunded with respect to AFB control and so the idea that you can build up a surplus to smooth the issue is nice, if our historical funding was at the right level, but it wasn't."

Other areas that will see an increase in spending are a move from 500 to 1000 honey samples to be tested for AFB, operation of a new IT system which makes it "much easier for beekeepers to comply with AFB PMP requirements", ensuring default inspections are carried out on hives where a certificate of inspection has not been submitted, and \$30,000 on the production of a monthly newsletter.

While some beekeepers consider an increase in levy to fund those actions onerous, King believes the levy increase should be seen in perspective.

"At the end of the day we are talking about 35 cents a hive and that is very little compared to the value of a hive and its honey if you have to burn it," he says. 🐝



# FORMICPRO

FOR TREATMENT OF VARROOSIS  
CAUSED BY VARROA DESTRUCTOR IN HONEY BEES (APIS MELLIFERA)

FORMERLY  
**MAQS+**

## THE SUSTAINABLE CHOICE FOR MANAGING VARROA MITES.

NO RESISTANCE. ORGANIC. SAFE WITH HONEY SUPERS. KILLS MITES UNDER THE CAP.



AVAILABLE THROUGH:



# ECROTEK



# nzbeeswax

LIMITED



*Healthy Bees. Healthy Planet.*

Available through beekeeping supply stores.  
866-483-2929 | [nodglobal.com](http://nodglobal.com) | [info@nodglobal.com](mailto:info@nodglobal.com)

    @NODAPIARY



# China Tightens Border to NZ Honey



When a consignment of honey from New Zealand was stopped at the Chinese border due to a failed American foulbrood (AFB) spore test last year, export requirements to New Zealand's primary international honey market were soon tightened. Now, all honey from these shores is subject to an AFB "not-detect" result before entering China.

The demand is not completely out of the blue, but it still took considerable work by the Ministry for Primary Industries (MPI) and Kiwi laboratories to make sure the honey channel remained open.

Overseas Market Access Requirements (OMARs) provide country specific requirements for animal products and in November the OMAR pertaining to New Zealand honey destined for China was updated.

Concerns from New Zealand's primary export destination for honey have been "on and off" for a number of years Apiculture New Zealand (ApiNZ) chief executive Karin Kos says.



**Bayvarol®**



## South Island

44 Gladstone St South, RD 22, Geraldine 7992  
P: 03 693 9189 E: info@beeswax.co.nz

## North Island

153 Maui St, Pukete, Hamilton 3200  
P: 07 849 6853 E: info@beeswax.co.nz

[www.beeswax.co.nz](http://www.beeswax.co.nz)

"Every year there seems to be at least one incident where New Zealand honey is stopped at the border due to AFB residues. So, it is not a new thing, they are just taking a stronger stance on it now," Kos says.

"In late October MPI advised us that China had suspended imports of honey from a New Zealand company. MPI worked with the industry to help us understand the issue and it was clear something needed to be done. So, MPI put up an updated OMAR in mid-November stating that all honey heading to China had to be tested for AFB and the result be a not-detected."

Defining what "not-detected" meant took some working through to get MPI, New Zealand laboratories and Chinese authorities on the same page.

Hill Laboratories are now registered to conduct the appropriate AFB spore test, but key account manager for honey Kim Murrell says it has been "challenging" trying to understand what the Chinese requirements are and the differences in methodology.

"The requirement was to have a not-detect, which is fine, but it depends on the methodology used as to what detection level you can achieve. It took a wee while to figure out whether our methodology was comparable to the Chinese or not. That has caused a bit of tension and frustration in the industry as we tried to understand that better," Murrell says.

The result has been a test down to 36 spores or cells per gram, at which point a "non-detect" result is returned, with a disclaimer as to the testing limit. MPI has been happy with that method and Chinese authorities also appear to be, Murrell says.

"We have had clients get their honey into China using this method. So, that is a good news story, but whether that will continue I don't know."

Gribbles Laboratories have provided an approved AFB test for honey destined for China since December. Lab manager Brent Hananeia says they are following MPI guidelines, and working with fellow labs.

"The laboratories involved work together, checking each other's samples to ensure consistency and make sure everything coming out of New Zealand is compliant and consistent," Hananeia says.


Kos also believes consistency is key and that a satisfactory solution has been reached.

"The labs have developed a testing regime that gives consistency of levels of detection. I don't think that is an issue anymore," the ApiNZ chief executive says.

Whether it be for market access or hive management reasons, AFB testing in honey appears to be becoming increasingly common, with Murrell saying at Hill Laboratories they have seen an increase in test requests in recent years.

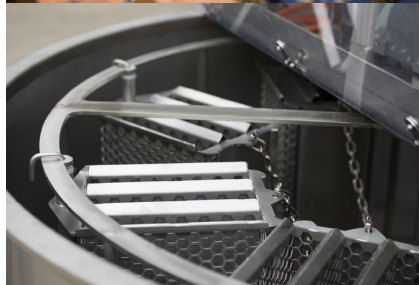
That aligns with the advice of honey exporter Hartnell & Associates managing director John Hartnell.

"We have been advising beekeepers for three or four years that they need to be very conscious of AFB spores in their honey," Hartnell says.

"We talk about it a lot. The good operators are testing and screening for it now as part and parcel of what they do." 



**crystechNZ**  
Extraction | Processing | Packaging



## Dedicated to delivering high quality honey processing equipment and fit out solutions

Extraction, processing, packaging and ongoing plant maintenance & servicing.



"Our plant was built on time. The quality of workmanship is excellent and their after sales service and friendly team are fantastic."

Contact us to discuss your solution on **07 579 0082** or visit **[www.crystech.co.nz](http://www.crystech.co.nz)**



# Do as the Bees Do



ANTHONY “THE IRISH DRONE” MORGAN

Our Irish beekeeping friend's first season of hive ownership was a beneficial experience on a number of fronts, not least for the state of his property. This month he explains how his industrious backyard tenants acted as a catalyst for a long-awaited home improvement job or two.

**Ever since I bought my house some 23 years ago, I had lived with dripping condensation on my aluminium framed double glazed windows, and that was inside the house! Plus, there were these nasty white plastic mock Georgian bars between the panes of glass. People thought they suited the house, but I always felt like a prisoner looking out.**

When I repossessed the house and got my first colony I quickly decided that this was the year to change the windows. Now, with PVC framed triple glazing throughout the house and an unobstructed view of my hives from my kitchen and bathroom windows, and no more dripping condensate, I am enjoying my home more than ever.

In addition to the new windows, the bees helped me decide what to do with a waterlogged, clay soil garden. I can dig a hole, it will rain, and when it stops raining, the water will stay in the hole (Irish problems 'eh?). This year I decided that I'm done with cutting grass. Partly because the ground is so boggy that I cannot mow a lot of it and partly because I began to wonder what is the point of spending time mowing grass, when it just grows back and needs to be done all over again every week during the summer? (Irish logic 'eh?).

It wasn't exactly a manicured lawn either, so nothing to miss about it, that's for sure. When I see the moorhens foraging around the wettest part of the garden, it brings me back to what a neighbour with a farming background said recently, "there's no such thing as bad land Anthony. Just bad farmers." Then it was easy to make the decision to work with the land.

It wants to be wet so I'll dig a shallow pond for the moorhens. On the periphery of the pond I'll sow a wetland meadow. In the pond iris and water lilies can be planted. I'm really hoping the pond will attract dragonflies, an insect I rarely see nowadays. The rest of the grass my neighbour rotovated and I bought api-specific wildflower seed, which I sowed in autumn.

Spring should be the start of an explosion of colour, as I also mixed in some less api-specific seed but more colourful. Altogether there will be approximately half an acre of wildflower meadow for my bees to visit, as well as attracting bumblebees, butterflies, ladybirds, moths and lots of other pollinating insects.

There is of course a natural seedbank and people more expert than I might suggest just allowing what's there to grow. I did try that this year and although there were lots of beautiful buttercups and blue clover, the bees simply did not visit those flowers. Perhaps it takes several years for a natural seedbank to really take off. I think the same is true for a planted wildflower meadow, but having a meadow is not just as simple as planting it and walking away...

Every year, about this time, the heads of the flowers need to be cut off, in order for the seeds to fall back to the ground.

Then when that cut foliage dies away, it needs to be raked off the ground. The local market gardener suggests using a strimmer with a plastic or steel blade, rather than strimming nylon. He says it gives a cleaner cut which supposedly is a more effective method, but all that can wait until spring time.

So, I think it's fair to say that bees are a real source of inspiration. They naturally lead by example. When I see how they are in perpetual motion one way or another, and working in concert, it's hard not to want to do everything possible to protect them and to bring them on.

Let the bees be your motivation!

*Anthony Morgan is a hobbyist beekeeper from Co. Wexford, Ireland, who was bit by the beekeeping bug during a working holiday to New Zealand in 2019-20.* 🐝



*The Irish Drone shows his cousin "Young Sally" through one of his hives on a sunny day in county Wexford.*



# Northland's Damp Squib

Cool and wet weather in October and November has put a dampener on the honey season in Northland, limiting manuka honey production, local beekeepers report.

Apiarists in the far north have reported significantly reduced manuka and kanuka honey harvests compared to the same time last year. While 2019/20 was seen by many as a bumper crop, the 2020 portion of the current season was far from it.

"I have spoken to a range of people and nobody thinks we have got a good season, that's for real," says John Craig, a beekeeper and spokesman for Northland beekeeping collective Tai Tokerau Miere.

"Personally, I had a terrible season, no manuka honey at all really."

It was climatic conditions that limited production, as opposed to a lack of flower, Craig says.

"Manuka started flowering really well, but then we got a cold snap and wet weather and it never did much after that. The bees sat at home and ate, because there was very little to collect at that time."

Whangarei Bee Club president and Apiculture New Zealand Board member Paul Martin says many beekeepers he has spoken with were hamstrung by the weather.

"The manuka season started early and didn't really get going before heavy rain and wind and it has since gone dry. The temperature was up and down and when there was a lot of manuka flower around it did not appear to be hot enough," Martin says.

"I noticed truckloads of hives leaving the district pretty quick. By the start of November they were heading south. In a good season they stick around well into November to get the really hot days."

The later flowering kanuka has been "patchy" according to both Craig and Martin, who deal with many beekeepers in their respective roles.

"I have heard the odd beekeeper saying they did alright. Even now, in mid-December the odd site is going well, but most are a bit puttery," Martin says.

Honey flows usually last into February at most sites, so there is still time left to gather lower grade honeys. However, Craig says he expects beekeepers with their own honey labels may be forced to buy in manuka honey and that the poor season so far is "just another pressure" on Northland beekeepers. 🐝



## Hive Straps

NZ MADE HIVE STRAP

*Have your company name and/or registration number woven into the webbing free of charge with orders of 25 hive straps or more!*

- ▣ New Zealand's No1 Hive Strap
- ▣ Replaces harsh to handle steel strapping & emlock
- ▣ Long lasting UV treated webbing for added longevity
- ▣ Ensure greater security when transporting hives
- ▣ Proudly New Zealand made for over 35 years

Quantity	0-199	200-499	500+
Price (+GST)	\$9.00	\$8.00	\$7.00

Phone: +64 3 376 4028 | Email: [tiedowns@aerofast.co.nz](mailto:tiedowns@aerofast.co.nz)







FOR VIDEO



OPEN CAMERA AND SCAN



# AFB Rate Remains Static



**There were less cases of American foulbrood (AFB) reported across the country last beekeeping season than the year prior, but the rate remained static.**

In December The Management Agency AFB Pest Management Plan released its annual report, which detailed 2783 reported cases of AFB for the year ended 31 May 2020, down from 2904 in the year ended 31 May 2019.

Both numbers are the equivalent of 0.32 percent of registered hives, with the total number of registered hives in New Zealand having fallen over the period.

The primary objective of the Agency is to manage AFB to reduce the reported incidence by an average of five percent each year in managed beehives. However, AFB incidence grew steadily during the high growth years in the industry, from 0.18 percent of infected colonies in 2012, to the current rate of 0.32 percent which has remained largely steady since 2017.

The Agency report suggests the drop in the total number of hives with AFB is due to their work targeting "high-risk" beekeepers.

Nine new high-risk operations, with a greater than 10 percent infection rate, were identified. 620 AFB colonies were destroyed by

inspectors at these operations, along with three operations which were deemed as high-risk from the previous year.

"The large number of AFB cases found by AP2 inspection of these twelve beekeepers' hives highlights that beekeepers with high levels of AFB are likely to substantially underreport their cases of AFB. This presents the Management Agency with a difficult challenge," the report outlines.

"While the majority of the 9,147 beekeepers who did not notify any cases of AFB to the Management Agency will have little to no AFB in their hives, a small number of beekeepers with very high levels of AFB will be hiding among them. Identifying these beekeepers and ensuring that they comply with National Pest Management Plan (PMP) rules is critical to the success of the PMP."

More beekeepers failed to complete their Annual Disease Returns by the due date of June 1 2020, with only 52 percent of all registered beekeepers completing their obligations, compared to 67 percent a year prior. The Agency report put this down to "the impact of COVID-19 and beekeepers taking time to resolve double-counting of colonies on seasonal apiaries," but debate surrounding amendments to the Levy Order governing the PMP are known to have caused some beekeepers to delay their returns. 🐝



## Minimalist design, maximum function.

Introducing our new Oval Squeeze Flask. The latest innovation in flask design from Pharmapac. Its clever compact design not only looks good but also has been designed with ergonomic key features in mind giving total user comfort when squeezing. Unlike other flasks this can be used both ways allowing product to easily be dispensed. This stylish new product is bound to turn heads...Available in two sizes – 375g/267ml and 500g/357ml. FDA & EU 10/2011 approved recycled PET (rPET) also available.



For more information about our new Oval Squeeze Flask, call on +64 9 444 9631 or visit the website [pharmapac.co.nz](http://pharmapac.co.nz)

**pharmapac**™

# Bringing the Big Buzz



December proved a big month for organisers of The Big Buzz festival, with marketing work kicking into overdrive as they look to build momentum heading into the February 14 event at Matakana School in Auckland.

We caught up with event organiser Grass Esposti to track progress on her and friend Isabella Sullivan's passion project to promote all things pollinators.

**"Isabella and I still talk about bees on Christmas day, much to our families' delight," Esposti says, highlighting her passion for beekeeping and The Big Buzz.**

Posters advertising the inaugural festival went up around Auckland on Boxing Day.

"Our core message needs to be loud and clear, bright and colourful and eye catching. We want to create a look where people will stop and say 'Oh Big Buzz. What's that?'," Esposti says.

What that is, is a free-entry festival with food, entertainment, activities for young and old, workshops, expert presentations, competitions and prizes, all based around the wonderful world of pollinators, honey bees, and all things associated with them.



*Matakana School principal Darrel Goosen has been a big supporter of bee education, and now the school will host the inaugural Big Buzz festival on February 14.*

"They work so hard for us. No one ever says thank you though," Esposti says of the insects which have captured her time and attention so much that she has become known as "The Bee Lady" around Auckland.

"In New Zealand our honey industry is so huge and the bees do such an immense lot of work, but we have never really celebrated them and said 'wow, thankyou beekeepers, thankyou bees, for all of your hard work'."

Through January the marketing and promotion of the event will continue. Already much work has been done, particularly by Esposti in Auckland primary schools where her Beetopia NZ programme educates kids on bees and beekeeping.


It is fitting that The Big Buzz will be held at Matakana School, Esposti says.

"Matakana School were the first school to come on board. They got the ball rolling and other schools interested, and their principal Darrel has been amazing. He dresses as a drone whenever I go in for a lesson."

Esposti has reached many kids through her teachings, as well as adults through various mentorships.

A celebratory festival is a step to educate more people.

"It was a natural progression, I guess. I got Isabella hooked on bees and this is now a wider audience.

"It's because we are so passionate about the subject and I saw you can captivate a three-year-old, as well as a 90-year-old, just by telling them certain things about bees. You can captivate people in a way that is not exactly by the books." 

Experiencing the world of NZ honey and bees

# the BIG BUZZ Festival

MATAKANA SCHOOL, 952 MATAKANA ROAD

SUNDAY 14TH FEBRUARY 2021, 9AM - 4PM

Enjoy a stimulating day out at THE BIG BUZZ experiencing honey, pollination, cosmetics, health, gardening, conservation and our environment.

## FREE ENTRY

FREE KID'S ACTIVITIES FOOD TRUCKS  
STALLS FREE TALKS & WORKSHOPS  
SPOT PRIZES & COMPETITIONS

[www.thebigbuzz.nz](http://www.thebigbuzz.nz)

Proudly supported by Unlimited Auckland (former ATEED), Ceracell Beekeeping Supplies, Mahu Community Trading Post and Matakana App.



# There's never been a better time...

## Views From Outside the Apiary



IAN FLETCHER

**After all of the 'hasn't 2020 been terrible...' writing that has been produced over the past 10 months or so, I wondered what's really happened.**

Firstly, the pandemic itself is nasty, but could have been worse. Comparisons help: worse than flu in mortality and long term effects, but way better than SARS in mortality. It's easy to forget that malaria remains a major killer. Looking back further, plagues (various), smallpox, polio, measles and others have each taken terrible tolls.

Secondly, our response: medically, we've been in the best place of any human society so far: 50 years ago, there'd have been no ventilators, only a hazy idea of DNA, no genome sequencing to start vaccine production, no internet to share data (and keep society going), no mRNA vaccine technology. Successful (and lucky) campaigns in our lifetimes (if you're my age at least) against HIV, smallpox, Ebola and SARS have left a legacy of institutional capability which the best-managed countries have benefited from.

Economically, to paraphrase James Shaw (the Greens co-leader), we had a choice between either a recession and thousands of

deaths, or just a recession. In fact, so far, it's gone better than many feared (though still grim). But we've learned that governments can borrow a lot more than they thought, and that has really softened the impact. That's worked in New Zealand especially as the 'go early; go hard' public health response has worked, and that meant social and economic confidence rebounded quickly.

Two big lessons go beyond the pandemic:

Firstly, the Thatcher-Reagan world view is dead. This was small government, reduced borrowing, privatisation – and the belief that government itself was the problem. This year we know government spending is sometimes the solution, and a shrunken and emaciated state has been a problem in many countries (and could have been here).

Secondly, government needs to be at least competent. That means making the right basic decisions and executing them moderately well. Not as easy as it sounds, we've learned.

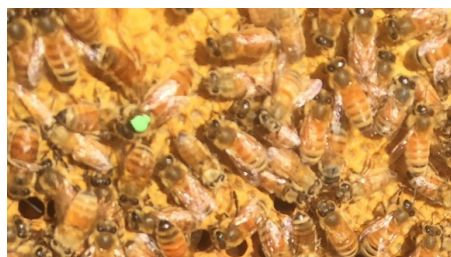
We will get through the pandemic. But we need to re-think what we want our government to be and how it relates to society. The lessons above strike at the heart of our politicians' consensus world view, and a lot of media comment too. Time for a new political model to emerge, in time for the next crisis.

Happy new year!

*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 through both the Manuka Charitable Trust and NZ Beekeeping Inc.* 🐝

## PYRAMID APIARIES

QUALITY ITALIAN QUEENS



TAKING  
AUTUMN  
ORDERS  
NOW!

### MATED QUEENS

New season mated queens available now.

### VIRGIN QUEENS, CELLS, NUCS

Available now.

MARLBOROUGH BASED  
COMMERCIAL & TERTIARY TRAINED BEEKEEPERS  
NO STAFF, JUST HANDS-ON OWNERS  
Nationwide overnight delivery of mated & virgin queens // Cells and nucs via pick-up only

P & L DAWKINS  
pyramid.apiaries@gmail.com  
027 383 7278  
www.pyramidapiaries.co.nz

# Whangarei Beekeepers Extracting Success

## CLUB CATCH-UP



### Brought to you by Hive World

With over 300 members, big turn outs to club days, regular events throughout the year and a club owned extraction facility, the Whangarei Bee Club is among the strongest in the country.

**"Like any club, it has gone through its patches, but we have had a really good committee for the last about seven years," says president Paul Martin, who also sits on Apiculture New Zealand's board as the non-commercial member.**

The club was formed in the 1980s, lulled through the 90s, but under the guidance of Kevin Wallace began to build in strength from the early 2000s. About 10 years ago they established an extraction facility for members' use.

Operating as Northland Pure Honey Ltd and now employing a manager in season, the facility in Whangarei has gone from strength to strength.

"It was initially set up as an avenue for members to extract their honey, but it has grown a bit. It is still exclusively for Bee Club members, but we have some commercial members who use it and that means they also take an active part in club days," Martin says.

It was the foresight of Wallace which drove the establishment of Northland Pure Honey, with the former club president sourcing second hand plant to get it up and running. The club partly financed the facility and loans from club members helped make up the shortfall.

Martin says the club "is lucky to have the facility", but good management seems to have been the major contributor to its success so far, including an upgrade of the plant.

"It hasn't all been plain sailing. The capital upgrade to improve the machines was significant. We are lucky the Bee Club has so many members and is able to be profitable. Northland Pure Honey is consistently profitable now as well. Between the club and commercial arm, we have managed to generate enough to wash our face and look after repairs and maintenance and capital needs," the president says.

Unsurprisingly, the extraction facility, which charges commercial extraction rates to members, is the envy of other beekeeping clubs.

"I get contacted once or twice a year by clubs looking to put together an extraction plant, but I only ever hear from them once.

They think it is a great idea but once you start looking into the money and requirements it is mind boggling. So, we are pretty lucky," Martin says.

The Whangarei club holds club days on the first Saturday of each month at the Whareora hall, with an average attendance of about 80 people and sometimes more than 100. Maintaining an appealing range of speakers at the meetings, plus regular demonstrations by commercial beekeepers maintains the strong interest and high attendance Martin believes.

"We have a motto of 'helping beekeepers keep bees'. When we are planning events we think, if it fits around that, we will do it. If it doesn't, we question it."

A highlight on the club calendar is the annual honey awards which have drawn a lot of interest since they were reinstated a few years ago. Trophies from the 1980s were dusted off, not having been presented since the early '90s. Now Martin jokes that the awards are almost getting too big, with over 50 entries in 2019 meaning judging took a long time.

With the club strong in memberships, meetings and events popular, a club apiary up and running and even their own extraction facility, Martin says the future of the club relies on maintaining what has been built.

"It's about keeping the apiary ticking along and giving the members what they want," he says, adding, "keeping on, keeping on".

*Anyone interested in joining the Whangarei Bee Club is advised to contact the club through their website, for details on the next club day.*  
[www.whangareibeeclub.co.nz](http://www.whangareibeeclub.co.nz) 

**HIVE**  
WORLD NZ LTD

SOURCING AND MANUFACTURING  
CREATIVE SOLUTIONS

**HONEY EXTRACTORS**

- 2 and 4 frame Manual
- 4 frame electric

Freephone 0800 000 770 | [sales@hiveworld.co.nz](mailto:sales@hiveworld.co.nz) | [www.hiveworld.co.nz](http://www.hiveworld.co.nz)



# App Provides the Key to Rust ID



People keen to support the fight against the fungal disease myrtle rust now have a new tool to help identify vulnerable plants in the myrtle family, including key natives important to beekeeping such as manuka, rata and pohutukawa.

**Manaaki Whenua - Landcare Research and Biosecurity New Zealand have partnered in the development of the NZ Myrtaceae Key – a free app that makes it easy for citizen biosecurity volunteers to identify susceptible plants and keep an eye out for the fungal disease myrtle rust.**

Myrtle rust has already spread across the top half of the North Island and cases have been recorded as far south as Greymouth.

"We know how much damage plant pests and diseases are causing overseas, and science partnerships, like this, will help us

stay ahead," says Veronica Herrera, diagnostics and surveillance services director for the Ministry for Primary Industries.

The app is easy-to-use, interactive, and comprehensively illustrated with more than 1,600 fully captioned images built in and it is downloadable for both iPhone and Android smartphones.

Landcare Research researcher, Murray Dawson says the arrival of the windborne myrtle rust in 2017 gave a new importance to being able to identify myrtaceae as heavily infected plants inevitably die.


"The disease is a threat to the important and substantial manuka and kanuka honey industry. Using the new app to accurately identify species of myrtaceae in New Zealand will make it easier to monitor and report cases of myrtle rust.

"By using the key, anyone, from farmers and trampers to gardeners and park users, will be able to identify plants to check for and report the tell-tale yellow spores, and diseased leaves," says Mr Dawson.

To use the app, the characteristics of the plant being identified are entered, the app then sorts plants possessing these features, and it rejects those that don't match. By progressively choosing additional features, the key will eventually narrow the results to just one or a few matching species.

Once a plant is correctly identified as in the myrtle family and the user thinks they see signs of the disease on it they may submit a photo it to the iNaturalist website. Experts can then check to confirm whether it is myrtle rust.

Capturing this information makes it available to agencies and scientists to analyse the rate of spread and observed impacts.

**The NZ Myrtaceae Key is available from the Google Play (Android) store and the iPhone app store, or through a web-based browser hosted by Manaaki Whenua.** 

## Striving to showcase your traceability and authenticity?

### WE HAVE THE SOLUTION: LASER ETCHING OR UNIQUE COLOR CODE PRINTING OF YOUR JARS!

We are an EU-listed honey packing facility offering honey filtering, blending, creaming as well as labelling and packaging ready for retail.

We pack in all types of jars – round, hexagonal, square, plastic and glass, from 40gm to 1kg.

We offer consistent labelling including top labels, tamperproof labels, round, square and hexagonal side labelling and full jar labelling.

*Tarata Honey*

1900 Tarata Road, Inglewood, Taranaki

Phone: 06 756 58 68

E-mail: [processing@taratahoney.co.nz](mailto:processing@taratahoney.co.nz)



# Aiming to Increase Bumblebee Longevity



New research backed by the Ministry for Primary Industries (MPI) could help bumblebee hives to live longer and be more efficient.

**The project is researching ways to protect the long-term sustainability of New Zealand horticulture, including how to enhance the performance of bumblebee hives using pheromones. This could mean better pollination for growers, leading to higher yields and better quality produce.**

MPI is contributing \$160,000 towards the \$400,000 project through Sustainable Farming Fund Futures.

Dr Gunjan Gera of Gourmet Waiuku Limited is leading the project, supported by consultant Dr Jo Stephens.

Gera says bumblebees are often used for pollination in berryfruit crops, glasshouses, and other covered crop areas as the bees tend to travel only about 200 metres from their hives and don't mind enclosed spaces, whereas honeybees prefer to fly to flowers further afield.

"In the field, the queen bumblebee of a commercial hive lives for approximately 8–10 weeks and the hive winds down once the queen dies," says Dr Gera.

"With fewer worker bees, the hives can appear less active when compared to honeybees and there can be variation in vigour and productiveness.


"Our project will study various factors and compounds in conjugation with the bumblebee queens to see if we can extend the life of a hive to at least 12–18 weeks. If this works, we have a way of complementing nature, using a pheromone substitute.

"The technology is in its infancy overseas and commercial companies using it haven't yet released much information," says Dr Jo Stephens.

"We're hoping to lead the way in New Zealand, but it will involve a good deal of trial and error given the limited progress globally in this area."

Bumblebees were introduced to New Zealand from the United Kingdom by the early pioneers, so there is limited genetic diversity. Although commercial breeders incorporate new genetic diversity from the wild occasionally, the gene pool is limited.

"Another important part of the research will be screening bumblebees for diseases, including those associated with inbreeding," Stephens says.

"We'll be looking at the levels of inbreeding in New Zealand populations to see if this is a major concern, and whether we need to consider the possibility of importing bumblebee genetics." 



Chartered Accountant

**An accountant who understands your business!**

I'm a Blenheim-based chartered accountant, hobbyist beekeeper, and business partner with all of my clients. What's important to me is understanding my clients' business and bringing that personal touch. Please contact me confidentially and without obligation if you'd like to discuss how I can assist you and your business this year.



www.marrnz.com  
Office: 03 929 3100  
Mobile: 027 276 7682  
Email: office@marrnz.com



Dr Gunjan Gera of Gourmet Waiuku Limited



**Helping Beekeepers Win Since 1982**

**Shop Online Now - Best in Beekeeping**  
**Ceracell Beekeeping Supplies Ltd NZ**  
**www.ceracell.co.nz or 0800 CERACELL**



# What's Changed? ApiWeb Upgrade Nearing Completion



Each month we look back on a story from a year ago and ask, what's changed?

In January last year we learned of plans to upgrade the often-maligned ApiWeb system for registering beehives and reporting American foulbrood (AFB). The upgrade has progressed and, despite being slightly behind schedule, it should soon be the new face of the portal.

In June Australian software development company SmartApps won the tender to upgrade ApiWeb, tasked with building a system which will integrate registration of hives, reporting of AFB and levy administration, plus include integration of google maps for plotting locations of apiaries and a smart phone application.

"As is typical with IT projects, we are running a little bit behind schedule," Management Agency national compliance manager Clifton King says.


"Instead of going live in late January, as originally planned, we now expect to go live in mid to late February."

Once they delved into the project with SmartApps, they discovered there would be some added complexities and this has delayed completion.

"When we started looking at the detail we discovered there was more there than we first realised. It has taken time to work through the methodology because it is really important to get it right,"

King says.

The current ApiWeb system has been in place for over 20 years, so they want to ensure a lasting system is built, King says.

"It is about getting it right not just out there quickly, but things are progressing and looking good for February." 

## CORRECTION

In last month's story UMF...MGO...APP?

It was incorrectly stated that Dr Swapna Gannabathula carried out her PHD studies with Auckland University of Technology, they were in fact completed through the University of Auckland while working alongside Comvita.

# Did your Christmas gift not hit the mark?

# Did you receive a dud prezzy?

Then the team at Bayvarol can help you out with one of their BeeGate themed beeswax wraps.



There are  
**10 packs**  
to be won

Tell us who you need a gift "do-over" with – or perhaps someone owes you something better? – and you will both go in the draw to win a boxed wrap to keep your lunches fresh this year.

Head to the Apiarist's Advocate facebook page, @APIADVOCATE, find the competition post and tag your friend or family member to get in the draw.

Lookout for BeeGate hive treatments coming to suppliers soon.

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

[www.apiaristsadvocate.com](http://www.apiaristsadvocate.com)

[www.facebook.com/apiadvocate](https://www.facebook.com/apiadvocate)

## Editorial

**Editor:** Patrick

To make comment or send press releases please email [editor@apiadvocate.co.nz](mailto:editor@apiadvocate.co.nz) or phone **Patrick, 027 383 7278**.

## Creative

**Design:** Amrita Ojha-Schroeder

## Advertising

For more information or to make a booking, email [advertising@apiadvocate.co.nz](mailto:advertising@apiadvocate.co.nz) or phone **Patrick 027 383 7278** or **Laura 021 130 7446**.

Booking deadline is the second to last Friday of the month prior to publication and artwork must be supplied by the final Friday of the month.

# Take your place in these pages

[advertising@apiadvocate.co.nz](mailto:advertising@apiadvocate.co.nz)

Patrick 027 383 7278

Laura 021 130 7446



**Never miss an issue!**

Subscribe at



[www.apiaristsadvocate.com](http://www.apiaristsadvocate.com)

# Don't miss the latest industry news



## SAVE



Save *Apiarist's Advocate* to your mobile device for ease of access anytime! Just choose the download  option from the bottom menu, then the Save to Home Screen  option from the next menu.

## PRINT



Print *Apiarist's Advocate* anywhere! Our layout is designed to fit A4 paper, so whether you're at home or work, simply hit print for your hard-copy.