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APIARIST'S ADVOCATE



News, Views & Promotions - for Beekeepers - by Beekeepers



The Glyphosate Issue

New Zealand Honey
Gets Put Under the
Microscope

Editorial



We lead this month with four stories focusing on what has, and looks like it will continue to be, a hot-button issue for the New Zealand honey industry. That being, residues in honey, and namely glyphosate residues.

Japan's decision to increase testing at their border has meant New Zealand has implemented changes to the Overseas Market Access Requirements (OMAR) for Japan to now include mandatory testing for glyphosate residues before honey leaves our shores. The wider issue goes deeper than that though, from the use of glyphosate in New Zealand (on farms, in forestry, by councils, or just residentially), to testing limits and the continued advancements made by laboratories, as well as the Minimum Residue Limits (MRLs) set here and amongst our trading partners, and much more.


Among our next five stories we don't cover every avenue, but do hear from farmers (in *Glyphosate – a Tool That Requires Care*, pg. 3) an industry body for beekeepers (*Source Before Solution*, pg. 4) an exporter (*Cross-Border Collaboration to Resolve the Glyphosate Issue*, pg. 6) an experienced beekeeper (*Default Limit Won't Do*, pg. 8) and even the boss at Comvita chips in, among other topics (*Welcome to Comvita: a 'Whirlwind' Year*, pg. 9).

Some of those stakeholders explain their situation, some identify problems and some even pose solutions (that's always handy). It seems the industry is at a crossroads, of sorts, when it comes to residue testing, but particularly glyphosate testing.

Do we take an idealistic approach and strive to produce honey with no residues, or at least levels below labs' detectable limits, even though this is so far below the food safety limit it makes little practical sense? Do we take that path at the risk of creating a rod for our backs as an industry, bearing in mind that lab testing limits continue to lower as techniques improve, and glyphosate use continues?

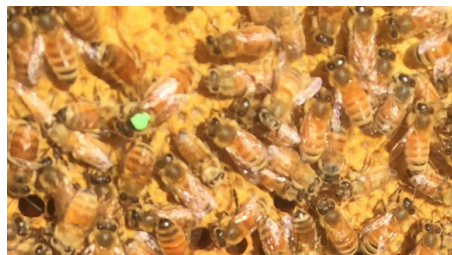
Or do we take a more pragmatic approach of encouraging government-to-government discussions to try and set more attainable MRLs with our trading partners? This comes at the risk of losing some of our 'clean and green' shine in what is an issue that is increasingly becoming about perception rather than reality.

To answer those questions we need more information about the source of the issue. Do we actually know how glyphosate residues are making their way into our honey? We have ideas, and they all could contribute, but is any one practice the culprit?

It seems there is still a long way to go to understand the *how?* and *why?* before we can decide *where to?* as an industry. 

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Glyphosate – a Tool That Requires Care

COLIN HURST,
*Federated Farmers Arable Industry
Group Chairperson*



The news that the Ministry for Primary Industries (MPI) requires all honey exports to Japan to undergo glyphosate testing has again generated media comment about the safety of its ongoing use.

Those in the primary sector are glyphosate's primary users, but it is also used for weed control by home gardeners, the forestry sector, and regional and local level government. It is used because it controls a broad spectrum of grass weeds and other broad-leaved weeds.

In the arable industry, glyphosate can be used as a late season control as part of a herbicide resistance programme. Waiting until after harvest to apply glyphosate can result in less effective weed knock down. To ensure it is effective, the herbicide must be applied when the weeds are growing.

There are two logistical problems associated with waiting until after harvest: weeds have by then stopped actively growing and application is likely to be ineffective; and second, harvest residue can cover weeds, which makes it difficult for the applicator to make contact with the intended target.

It is also used by farmers who prefer the no till approach. Spraying out a paddock with glyphosate removes the existing cover and allows the establishment of new crops or pasture. This enables direct drilling of seeds into soil and is an alternative to cultivation, ploughing and power harrowing preferred by some farmers.

There is some anecdotal evidence which suggests glyphosate is used as a harvest aid in wet seasons. But this is an exception, rather than a rule. In a wet season, getting even crop ripening is extremely difficult. Unlike vegetable or fruit harvesting, arable farmers are

unable to "cherry pick" the ripest parts of the crop to harvest first and come back for the rest at a later date.

The role that bees and beekeepers play in the primary sector is not taken for granted by arable farmers. We are world leaders in seed production and these seed crops (such as carrots and other brassicas) require pollination by bees, hence beekeepers are contracted to provide pollination services on farm. Given the importance of bees and beekeepers on an arable farm, arable farmers will take all practical steps to maintain bee health.

At Federated Farmers we have continued to undertake proactive steps to promote bee-friendly planting, such as the Trees for Bees project.

We are consistently monitoring and sharing industry approved best practice information relating to best practice around agrichemicals and pollinators, that information is regularly shared with our members through our various channels.


The Bee Industry Group was one of Federated Farmers seven industry groups, until unification of the National Beekeepers Association and Federated Farmers Bee Industry Group which in turn created Apiculture New Zealand.

We have a running dialogue with Apiculture New Zealand around communicating important messages around pollinator safety with farmers and beekeepers.

The use of glyphosate continues to come under significant pressure from some stakeholder groups, but all chemical use is regulated by the Environmental Protection Authority, under the Hazardous Substances and New Organisms (HSNO) Act and now by Worksafe.

Some supply contracts will now have chemical use clauses built into them. An example of this is that milling wheat and malting barley contracts clearly specify that glyphosate cannot be used pre harvest.

There is a significant volume of cereal grain imported into New Zealand that is not subjected to these same criteria used in the human and animal food supply chain. New Zealand growers therefore need to ensure that their agrichemical use meets a growing list of health and safety, Growsafe, contract requirements and other quality assurance scheme requirements.

Colin Hurst is a Federated Farmers national board member who chairs their Arable Industry Group, the spokesperson for the New Zealand Agrichemical Education Trust and a mixed cropping and livestock farmer in South Canterbury. 



Colin Hurst

Source Before Solution



New Zealand beekeepers are in the dark when it comes to understanding the source of glyphosate residues in honey and the Ministry for Primary Industries (MPI) needs to help provide answers, New Zealand Beekeeping Incorporated (NZBI) say.

The apiculture industry body has put out a call to their members to provide glyphosate test results and information to them, and wants other beekeepers to follow suit, so they can gain a better understanding of what is causing residues to end up in honey.

NZBI have also appealed to MPI for more details surrounding the 360 honey samples they tested between 2015 and 2019 for glyphosate residues as part of the National Chemical Residues Program (NCRP), plus any other applicable data.

"That information would be useful for us, but MPI are very reluctant to share it at present and I am not holding my breath on it," NZBI president Jane Lorimer says.

"Is it comb honey? Bulk honey? Right across the board? Right throughout New Zealand? We want more information from MPI, but at the moment they are not releasing much at all."

MPI's publicly available report from their 2015-19 testing shows glyphosate residues in 22 percent of honey tested, but no residues above the regulatory limit of New Zealand in honey available for sale. The report provides some detail around floral varieties of the honey, but no geographic or land use data.

Until beekeepers understand what is causing the problem of glyphosate residues in honey, it is impossible to propose a solution, NZBI believe.

The MPI report summarises that the most likely cause of residues in honey is "exposure of honeybees to glyphosate from its approved use in agriculture".

"The most likely source is glyphosate going into plants that the bees then forage on, but we just don't know. That is why we want more information from MPI, to establish the regions where the positive tests have been coming from," Lorimer says.

"We are assuming farmers are applying glyphosate in accordance with directions, so why are we finding residues in honey?"


With MPI reluctant to share specific details of where samples have been collected from, if they have it, NZBI are asking beekeepers to share their glyphosate test results, both positive and negative. Along with applicable information, such as the region the honey came from, nectar sources, land uses and if the hives were moved into specific pollination areas, a range of test results from around the country will help shed light on the source of the issue, NZBI hope.

"We want to get an overview of what percentages are coming up positive, what are coming up negative and in what areas they are experiencing problems," Lorimer says.

"In our discussions [at NZBI] we assumed there might be some regions that are high in residues, but, until we get information, we can't second guess what is going on."

Lorimer believes that MPI will hold information, gleaned across a range of primary industries, that will help paint a clearer picture.

"We need that information they hold from testing right across the primary sector. We need to hold a conversation discussing what is happening right across primary industries."

NZBI have requested beekeepers send details of their glyphosate test results to info@nzbeekeeping.co.nz where they will be treated confidentially, but used to help increase understanding of occurrences in honey. 





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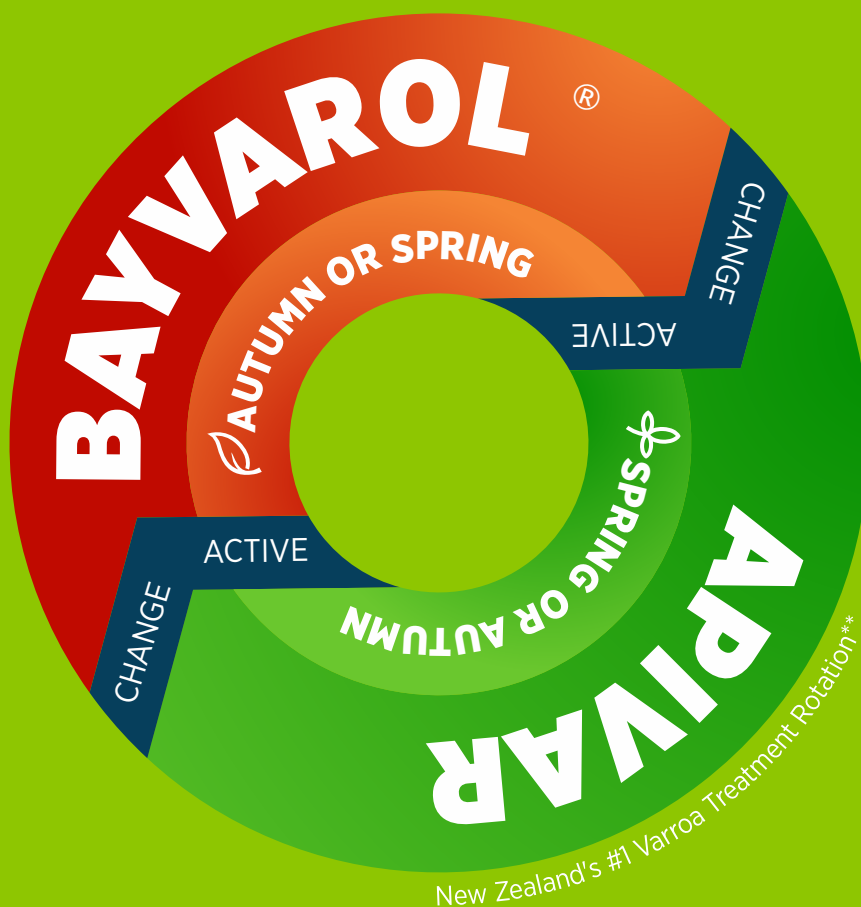
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Cross-border Collaboration to Resolve the Glyphosate Issue



Mishandling of any more occurrences of glyphosate residues in New Zealand honey destined for Japan has the potential to have a “massive impact” on the Kiwi honey industry and the government needs to step up to quell concerns with the Asian nation, says the chief executive of one leading exporter. 100% Pure New Zealand Honey has been exporting to Japan for over 20 years, and CEO Sean Goodwin has concerns that, if any future breaches of the glyphosate limits are not handled properly, the market could be shut off.

In January the Ministry for Primary Industries (MPI) alerted the honey industry to concerns from Japan over honey from New Zealand which had been randomly tested at their border with results above their maximum residue limit (MRL) of 0.01mg/kg. Shortly afterwards rules were imposed requiring all Kiwi honey exporters to provide test results of their product which proved compliance, before sending it to Japan.

Japanese officials have warned that if honey tested at their ports continues to raise red flags, then future New Zealand honey exports could be banned.

“If we were to lose the ability to send honey to Japan, we would see the whole New Zealand honey market impacted significantly,” Goodwin warns.

“It is in excess of 800 tonnes of honey a year and we can’t take that up in other markets, not for the foreseeable future.”

Timaru-based 100% Pure NZ Honey supplies a portion of that 800-plus tonnes each year, and has done so for over 20 years, giving Goodwin a thorough understanding of the market. He has also served on the Board of Apiculture New Zealand until recently.

He has concerns that exporters could get caught with glyphosate residues above Japan’s limits.

“You could have a compliant result here, send it to Japan and get a non-compliant. I’m sure that will happen. At that point we are going to need Government and MPI support to manage that,” Goodwin says.

Labs can test down to 0.01 mg/kg for glyphosate, equal to Japan’s MRL, but with a margin of error of around 20 percent. This makes the scenario of differing test results in two different countries a real possibility and concern, Goodwin says.

New Zealand’s MRL for honey is 0.1mg/kg, ten times that of Japan and at a level which MPI says is still of no food safety concern. The fact that Japan has set their limit so low is something which MPI and the government also needs to take a leadership position on, Goodwin believes.

“Import limits should be science based, not simply a reflection of the minimum detectable level from labs.

That makes it not only very difficult to supply honey and get a batch that works now, but there is a risk that as science develops and the labs limit of reporting reduces, countries may lower their limits even further. This does not only apply to glyphosate, but any testing required for export.



Sean Goodwin, the GM of 100% Pure New Zealand Honey says collaboration at a government level is needed to help resolve testing issues.

"While countries have a right to determine their own import levels, I would like to see more international standards brought about through government-to-government discussions based on science. The fact is, currently there are different levels set in each market and that makes it very difficult."

100% Pure NZ Honey has been strictly testing honey consignments for glyphosate since the issue initially made headlines in July last year and Japanese buyers raised concerns. Since then, any honey bought in from beekeepers supplying the company must come with a glyphosate test, and Goodwin says there are very few batches which raise red flags.

It can be blended down to low levels, but that, along with retesting of individual post packs of honey, comes at a cost and reduces efficiencies.

Honey can sit in Japanese ports for two weeks before testing on their end is complete. On top of that, one batch of honey can require testing numerous times in Japan if it is supplied to multiple customers, Goodwin says.

"That is madness. The same batch of honey is being tested five or six times. It is adding costs at a time when the CPTPP (The Comprehensive and Progressive Agreement for Trans-Pacific Partnership) is supposedly reducing important tariffs into Japan and we are trying to make the product more appealing to consumers. This is just inefficient and adds cost. The whole

purpose of government-to-government border conversations is supposed to optimise these things."

It is a good time to have "strong and healthy" relationships with Japanese honey buyers, Goodwin says, noting that they too see gaps in their government's approach.

"They recognise it is an issue within Japan across other food groups, but they are very supportive of what the New Zealand Government is doing and what our company is doing in testing product. So, they understand the need to test product, but they believe the limits are too harsh and the level too low."

With both seller in New Zealand and buyer in Japan largely on the same page, Goodwin is calling on the respective Governments to work collaboratively to quell concerns and simplify matters.

"It is something we have to deal with in the short term, and we hope that MPI and the Ministry of Foreign Affairs and Trade can start to have a conversation about getting back to using technology in the way it was intended. That is making these transactions more efficient.

"Where limits are put in place, we want to understand them and have them based around science. Then we can work to them and work with the labs to come up with the tools to manage it."

It's an approach which the exporter hopes can not only protect a key market, but also help ensure the honey industry maintains value for their product. 🐝

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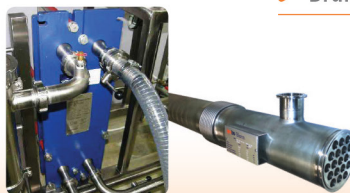


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Default Residue Limit Just Won't Do

ROGER BRAY



The NZ beekeeping industry is very much victim of a failure, by the authorities, to conduct a residue assessment for glyphosate in honey and set a realistic Maximum Residue Level (MRL).

When MRLs for glyphosate were established for agricultural produce it appears there was no assessment for honey as glyphosate was not considered to be part of the production cycle for bee products. So, the limit of residue for glyphosate (in Japan) became the default level of 0.01mg/kg.

Other agricultural produce were assigned residue limits as a reflection of the use of glyphosate within the growing cycle of the produce. Generally, we see fruit and vegetables with residue levels set at 0.20 and grain crops with MRLs set at 30.00mg/kg.

Regardless how residues are getting into honey, the issue is now that the "rules" have become inconsistent with the reality of the situation. As well, we have a testing capability that can pick up minute amounts of residue in any product.

As a result, we have a ridiculous situation that determines it is acceptable to have a piece of bread/toast made from grain with

residues of glyphosate approaching 30mg/kg whilst it is not within the MRL set to have honey on that bread/toast with a residue that exceeds 0.01mg/kg.

The issue really is that as time goes on and glyphosate use increases in the production of food, it is inevitable that residues will end up in all food products. Therefore, it does seem logical that realistic MRLs should be established for all food products once there has been an adequate assessment process. In view that glyphosate residues have been identified in honey our industry should question why the MRL was set so low (in Japan) compared with other agricultural produce.

As a follow on from this, some industry spokesmen, as well as some marketers of honey, have handled the issue poorly. The issue has become sensationalised by the media as a 'got ya' situation because beekeepers have generally promoted honey as a clean and green, natural product, which comes from beekeepers that do not use many of the chemicals associated with modern production agriculture.

As beekeepers we are also pretty sensitive on what we use in our beehives and how we promote our products. So, to have negative publicity about our products and the finding of glyphosate residues, however low as they may be, is disturbing.

But is the answer simply to introduce a mandatory testing regime and withdraw or blend product with residue issues?

For the producer, that just adds further costs while not addressing the fundamental problem. That being, the default MRL of 0.01 (in Japan) appears to no longer be a realistic amount for honey.

Roger Bray is a long-time Canterbury beekeeper and New Zealand Beekeeping Inc Board member. 

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Welcome to Comvita: a “Whirlwind” Year



When David Banfield took on the role of Comvita CEO in January 2020 he inherited a company which had posted a loss of almost \$28million the previous year and was on the way to a \$9.7million loss in the 2020 financial year. He could hardly have anticipated the challenges, and ultimately surge in demand, that the health food company specialising in honey would face. Now, 12 months down the track, he reflects on progress made and a desire to set up the publicly listed company for many years to come.

In 2024 Comvita will celebrate 50 years of existence and Banfield hopes, by then, they will be much better placed to survive for at least 50 more.

Headquartered in the same small Bay of Plenty town of Paengaroa where local beekeeper Claude Stratford co-founded the company with Alan Bougen in 1974. It's a world away from Banfield's native England, but the Brit moved to the region a year ago to take up the CEO role, following six years based in Auckland as CEO of shower and tapware company Methven.

He describes his first 12 months in the Comvita job as “a whirlwind”.

“Above everything, I feel privileged to lead Comvita. We know it has had some challenges in the recent past, but the opportunity to come in and lead the turnaround and transformation of the business is one that is really significant,” Banfield says.

“I have found some really special things at the heart of the business. We have achieved quite a lot in the first year, but there is a lot more to do.”

TAPS TO HONEY

Comvita had seen strong growth alongside the boom of the manuka honey industry, before posting losses in 2019 and 2020. Banfield, who replaced Scott Coulter as Comvita CEO, was coming off a successful stint leading expansion of Methven products into new global markets.

“The Board were clear of the type of CEO they wanted. That was someone who knew what ‘good’ looked like and was prepared to move heaven and earth to set the business up for long-term growth,” Banfield says.

Comvita chief executive David Banfield.

Photo Matt Crawford.

That meant a renewed focus on products, such as high-grade manuka honey and propolis, and markets, namely China and the United States, where the New Zealand company could “win”.

“The company needed to have a stable base from which to build. Over a period of time we had become complex, with a number of different layers in the structure, and a lot of different functions in market.”

Effectively, Comvita had been setup to be a much larger company than what became realistic. So, Banfield has overseen a retrenchment, including making 90 staff redundant in his first six months in the job.

Of course, his arrival was closely followed by a global pandemic which would see Comvita face difficult operating conditions, while demand for their product soared.

COVID RESPONSE

In calendar year 2020, Comvita turned their flailing financial results around to record profits in each of the first six months. That followed a loss of \$13million from July to December 2019, leading to their \$9.7 loss for the 12 months to 30 June 2020.

Despite Covid-19 and its effects seeing consumers flock for manuka honey and other health products, thus increasing Comvita's sales, Banfield believes the improvements to the business which he has overseen in 2020 were instrumental to the financial turnaround.

“It is impossible to say what is due to Covid and what is due to the changes in the way we trade. I think it is more the latter.

“We were a supply focused organisation before and we want to be consumer focused. That is what we have attempted to do. We have flattened the structure, have got quicker and are a better customer to our suppliers and a better partner to our consumers. That is helping us get traction.”

The CEO says the “flattening” of operations made a quick response to a surge in demand for manuka honey around the world more effective.

“The difference between Comvita and anyone else in the category is that we have subsidiaries around the world and therefore our own people in those markets. We should be, and are, getting quicker at responding to market needs. Because we own the subsidiaries, we can manage where we have stock, be it Paengaroa, or China.

“We took a country-by-country view depending on what we saw from the supply chains. The team did a brilliant job making sure

we had the right stock in the right markets at the right time. At the same time – coming back to our renewed focus – we had been reducing our SKU (product) count and that helped us because we didn't have the large range of products we would previously have had. That meant being able to focus on the right products."

Banfield happened to be in China when Wuhan first went into lockdown and the experience helped shape his decisions.

"Seeing first-hand a major city closed down, it implanted an obligation that health and safety overrode everything. Our team around the world – and we have circa 350 people outside New Zealand – had to be safe. We had to think about the different states of different countries as they went through Covid. In everything we did, we started by making sure we looked after our team."

WIDER ISSUES

While the effect of a global pandemic has shaped Comvita's operations in the last year, there are still plenty of other issues facing the honey industry.

On the topic of defining manuka honey, Banfield reinforces Comvita's position of alignment between international and domestic standards.

"It is illogical to have an international standard that is not the national standard. Consumers in New Zealand should get the same standard as consumers around the world. The higher the

standards, the more people that will be satisfied and the better the long-term outlook is.

"As an industry we should keep pushing the standard up, both internationally and at home, and make sure we are constantly looking to be better than we have ever been. That is a voice you will constantly hear from Comvita, how do we make ourselves even better?"

High standards and long-term thinking is what is required to respond to the issue of glyphosate residues in honey too, the Comvita CEO believes, saying the New Zealand honey industry should be "pushing our standards up to make sure we don't just navigate it, we excel through it".

SETTING IT UP

Whether Comvita can excel through Banfield's second year in charge may well come down to whether the boom in sales experienced since Covid-19 took hold of the world remains. Regardless of that though, Banfield says his focus will be on continuing to stabilise foundations for the business.

"It is that absolute focus on doing the right thing for the long term of Comvita," Banfield says, adding, "I see the opportunity to do some things within the company that in five years' time we can look back and say, 'they were pivotal in setting the company up for the next 50 years'." 🐝



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Be a Part of the Big Buzz



With the inaugural Big Buzz Festival just around the corner on February 14 in Matakana, Auckland, organisers are calling on the beekeeping community to get behind the event to help swell attendance. The festival promises plenty of fun for the whole family, coupled with education and entertainment, all designed to promote the humble honeybee, fellow pollinators and the beekeeping industry.

"Come along to the festival and spread the word!" says Big Buzz Festival co-organiser Isabella Sullivan.

"As a beekeeping community we should all feel a vested interest in this festival because it is a voice for the beekeeping community. Beekeepers should feel like ambassadors, so if they can't come, send friends."

Sullivan, and festival co-organiser Grass Esposti's, enthusiasm for the event, beekeeping industry and bees in general is infectious and that is the feeling they hope to impart on all visitors to The Big Buzz at Matakana School.

"We are basically eating, breathing and dreaming festival stuff at the moment," Sullivan says two weeks out from the inaugural not-for-profit event. It is easy to see why, with so much on the timetable between 9am-4pm.

The day will feature a mix of stalls, workshops, presentations, kids' activities and – maybe best of all – free honey flavoured ice-cream from award winning ice-cream shop Charlies Gelato.

Among the presentations will be talks from Dr Ngaire Hart on native bees, a cooking demonstration from Michelin Star winning chef Cory Campbell and Andrew Cory on the Niue Bee Sanctuary, plus a tasting of over 50 different honey types which Esposti has collected from around New Zealand.

"That will give people a chance to see the colours, the flavours, consistencies and smells of different New Zealand honeys. Then, after that, they get free ice-cream. It doesn't get better than that!" Sullivan says.

While the presentations might appeal to the adults, kids will surely be keen to venture inside a giant beehive, complete with sounds of the hive and photos of bees. There's even an outside wall to write Valentines Day wishes on, being February 14.

Two master beekeepers will be present, educating festival goers on all things beekeeping. They will be alongside a wide range of stallholders, plus a centralised marquee which will host school projects, created by students following visits by Esposti as part of her Beetopia NZ education program.

Now, a few weeks out, Esposti is excited to bring such education to a wider audience.

"More and more people are talking about the event, and that is giving us confidence," Esposti says.

Building confidence in themselves and the event is important to Sullivan and Esposti to prove to stakeholders that, having dreamt up the idea of a not-for-profit festival to celebrate honeybees, pollinators and the environment only about a year ago, they can make it happen.

"We believe we have established that we are serious about what we are doing and now, if it is called off, it will only be because of Covid. It is not because we don't have the funds or are not capable. We would have established a precedent for what we are doing with everyone involved," Sullivan says.

All going to plan, the Big Buzz Festival will be more than just a one-off event, so the organisers are asking beekeepers and the apiculture industry to get behind them, get along to the festival on February 14 and better yet "bring your honey" this Valentines day.

The Covid Issue

2020-21 has been a challenging time to plan a festival, amid Covid concerns, but The Big Buzz organisers say they have all the safety measures in place and contingency plans to give their festival the best chance of going ahead.

If the Auckland area is at alert Level 2 or above then the event will be cancelled, otherwise it will go ahead, which looks the most likely outcome.

On February 10, four days out from the event a call will be made either way.


Such contingency measures are just part and parcel of organising an event at this moment in times, Sullivan says.

"We are going ahead and trying to be a positive as possible. We have got this far, through a whole year of Covid. We are going to beat it."

QR codes and disinfectant hand wash will be available at the festival, while volunteers will be supplied face masks.

"The thought of postponing for another year did cross our minds, but, because this is the inaugural event, we need to create something to start the process of a honeybee festival," Sullivan says.

"If we had contacted all the stakeholders, funders, sponsors, stall holders, to get everyone involved, then said 'no, we are going to wait another year', we would have lost our credibility and picking it up again after that would have been very hard."

Covid-19 guidelines can be found on the festival website,
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9.45AM	H	Presentation of the BIG BUZZ Education Project
10AM	H	Spelling Bee
	W	Marianda Tydwell's Installation Piece
10.30AM	H	Master Beekeeper Q&A
	T	Dr. Ngaire Hart on 'Native Bees of NZ'
	K	Paint a Beehive
11AM	H	NZ Honey Tasting & Pairing Sessions
	W	Karen Williamson's Natural Floral Dyeing Demo
11.30AM	T	Andrew Cridge on 'Bees as Bio-Security Monitors'
12PM	W	Michelin star Chef Cory Campbell Demo
	K	Talks with a Beekeeper
12.30PM	T	Andrew Steens on 'Planting for Pollinators'
	K	Sensory Activities with Beeswax
1PM	H	NZ Honey Tasting & Pairing Sessions
	K	Bee Arts & Crafts
1.30PM	K	Rachel Weston Readalong
2PM	H	Prize Giving
	T	Andrew Cory on 'Niue Bee Sanctuary'
2.30PM	W	Colleen Kangwai's Hand Made Journals Demo
	K	Games!
3.30PM	K	Rachel Weston Readalong

KEY: FESTIVAL HIVE = H, TALKS = T, WORKSHOPS = W, KIDS' AREA = K

KIDS' AREA

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Native Bee Buzz



Among the speakers at the February 14 Big Buzz Festival will be a woman who has made it her mission to monitor, promote and protect New Zealand's native bee. Dr Ngaire Hart has gathered evidence of their decline and at the Big Buzz Festival will spread the word on how to identify and aid the plight of the native pollinators, without which we could face a dramatic decrease in New Zealand's plant life.



Dr Ngaire Hart will be speaking at The Big Buzz festival about the plight of native bees.

Ngaire Hart has a special connection to the 28 species of native bees found around New Zealand, having studied them as part of a Masters degree in environmental science, then developed an image analysis tool to monitor their populations during an engineering PHD at Auckland University of Technology.

"Me and my family's view is that we look

at them as kaitiaki to us. How other people relate to the natural environment is up to them, but that is how we related to native bees," Hart says.

That kaitiaki, the Maori term for guardianship, has seen Hart continuing her work with native bees for the five years since her studies concluded. She maintains an annual monitoring program over six Northland sites and carries out promotional work, such as offered by the platform at the Big Buzz Festival.

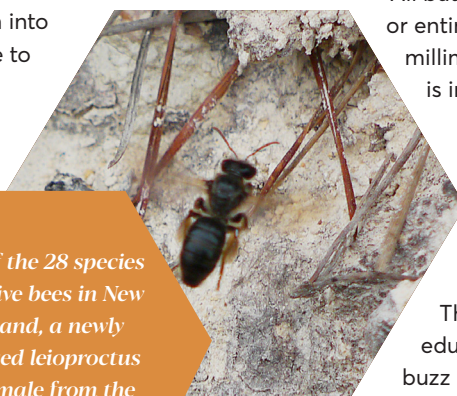
"One of the big risks is that not enough people know about them. It is really important to raise awareness of native bees," Hart says.

"Most people don't know of them and they are genuinely shocked, surprised, then delighted that we have endemic species of bees."

Hart struggles to get funding for research into native bees, but work does need to be done to better understand their populations and if they are in decline nationally. Initial counts carried out during her studies identified significant declines across several of her monitoring sites.

"We need baseline data to understand what is happening, to see where there are changes and why. Is there reason for concern?"

One of the 28 species of native bees in New Zealand, a newly emerged leioproctus sp. female from the colletidae genus.



Of the 28 species of bees native to these shores, 26 are endemic and thus only found in New Zealand.

It is difficult to say what the result of a decline in native bee populations might mean for our ecosystem, Hart says.

"Scientists don't necessarily know what the interconnection between the bees and plants exactly is. It is not a good thing to lose an endemic pollinator like the native bee though, because they have evolved alongside native plants and those relationships between bees and plants have been developed over a very long time.

"We do know that native bees are best at pollinating many native plants, better than a bumblebee or honey bee. Some native bees have a particular preference for some native plants and really only go to those trees for forage, manuka is one, kanuka another," Hart says.

High stocking rates of honeybee hives in bush areas has had an impact on native bee populations Hart believes, but the most pragmatic thing humans can do to support them is to educate others on their existence and needs.

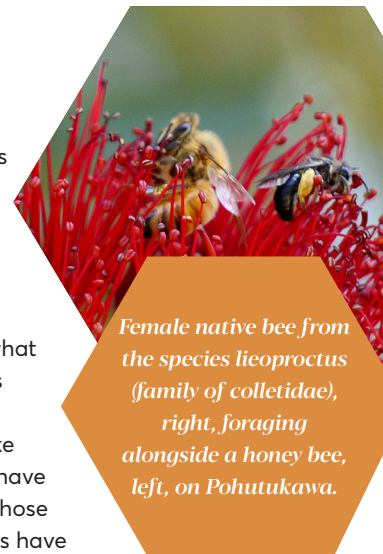
"They need a variety of plants but natives are best as that is what they have evolved with. They need undisturbed areas, that needn't be huge."

Native bees are solitary, but fly en masse in the summer months, from November to February. They live in holes in the ground, often in dirt banks.

All but one native bee species are predominantly or entirely black in colour and range from five to 12 millimetres in length. Differentiating them from wasps is important.

"I know people who have mistaken them for wasps, sprayed and exterminated a whole community of bees. Just because they didn't know what they were," Hart says.

So, as human influence spreads further and wider, awareness is key to protecting native bees. That's why on February 14, Hart will appeal to and educate her audience in Matakana, so that the big buzz of native bees may continue on. 🐝



Female native bee from the species leioproctus (family of colletidae), right, foraging alongside a honey bee, left, on Pohutukawa.

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New and Improved ApiWeb Just Around the Corner



It might be a little behind schedule, but the ApiWeb upgrade is on its way, with the American Foulbrood (AFB) Management Agency's online portal for apiary registration set for launch in early March. A modern and user-friendly interface and backend is anticipated, along with an app, with hopes they can lead to more accurate data held and create efficiencies and time savings for both beekeepers and the Agency alike.

Beekeepers will be able to register apiaries in the field via an app, see apiary locations via Google Maps, plus report cases of AFB in the field.

For the Agency, the ApiWeb upgrade will consolidate beekeeper information, giving staff a "360-degree view" of all that information and therefore make monitoring beekeeper compliance easier.

"I am looking forward to it being implemented," national compliance manager Clifton King says.

"We are looking forward to having a better system in place to support beekeepers and also a better system in place to support the Agency's staff. It will make it easier for them to do their jobs and focus on what really matters, that is managing AFB."

Initially planned to take place in January, changeover is anticipated for early March. Piloting is scheduled for February, with about 30 beekeepers going through a trial changeover.

Come March, all registered beekeepers will be sent an email inviting them to setup logins on the new system. This will require them to follow a link and enter a password. Once reregistered, all their current information held in ApiWeb will again be available in the new system.

King says he is confident in the new system, but anticipates there might be some work required in helping beekeepers through the changeover. One area there could be hold ups is in setting new logins and passwords.

"There will be beekeepers that assume they can just use their current ApiWeb login and password, which won't work. Beekeepers'





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login will be based on their email address, but the password will be a new one they choose. We can't migrate their current password into the new system. That is a poor security practice."

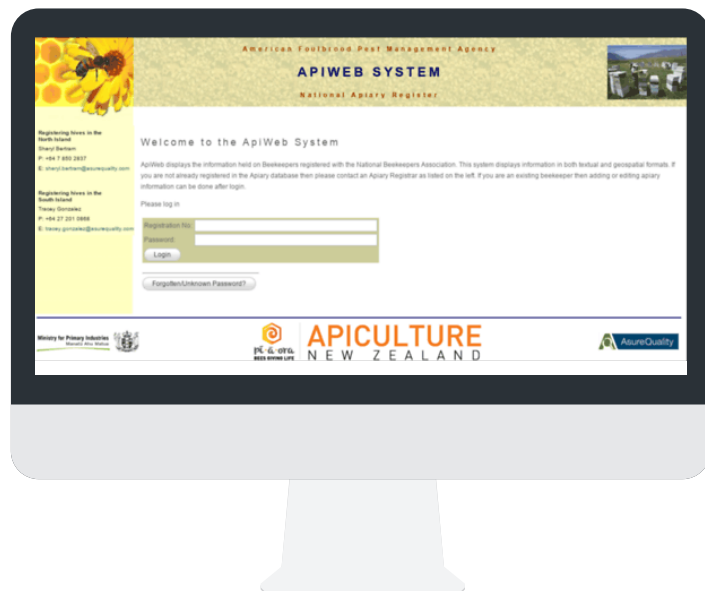
The national compliance manager advises beekeepers to have all their apiary data on hand when they login, as it will be a good time to update information. Getting apiary locations correctly placed is the major area needing addressing.

"Under the old system, beekeepers don't get visualisation on where their apiary is, whereas with the new system there will be google imagery sitting in behind and beekeepers will get visual imagery of the location. We expect a number of beekeepers will then realise their currently registered apiaries are not in the right locations," King says.

Updating locations will also be made easier through the newly designed ApiWeb app, which will allow for recording of information while in the field. Even if out to cell phone reception, the information will be stored and uploaded once the user is back in reception or connected to the internet.

While the new system is likely to provide Agency staff with efficiencies in their work, King says he expects there to be increased demands on their time, at least in the short term, as they help assist beekeeper changeover.

Delays to the launch of IT projects is not atypical, and the ApiWeb upgrade has had more complexity than initially planned, thus it is taking longer to complete, King says.



Screenshots like this will soon be a thing of the past, with an ApiWeb upgrade on the way in March.

Despite the delay the project is still on budget, with \$975,000 having been set aside for its development and ongoing management over a five-year period.

Australian company SmartApps, which has a Wellington office, developed the upgraded ApiWeb and app. The customer relationship management software Salesforce has been used, to provide data security and ease of use. 🐝



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North American Research Sheds Light on the Secret Reproductive Lives of Honeybees



Recently published research out of two universities, in the United States and Canada, shows that there are trade-offs between sperm viability and the expression of a protein involved in the insect's immune response. This story, by Dee Shore, explains the findings and how they could lead to a greater understanding of the reasons behind queen failure.

Honey bee health has been on the decline for two decades, with U.S. and Canadian beekeepers now losing about 25 to 40 percent of their colonies annually, and queen bees are failing faster than they have in the past in their ability to reproduce. The reason has been a mystery, but researchers at North Carolina State University (NC State) and the University of British Columbia (UBC) are finding answers.

Their latest research, published January 8 in the journal *Communications Biology*, offers clues about what's behind queen bee failure, finding that when sperm viability is low, the expression of a protein known to act against pathogens such as bacteria and viruses is high.

David Tarpy, a University Faculty Scholar and professor in NC State's Department of Entomology and Plant Pathology, says the study has important implications for beekeepers and their customers, the farmers who rely on honey bees to pollinate their crops.

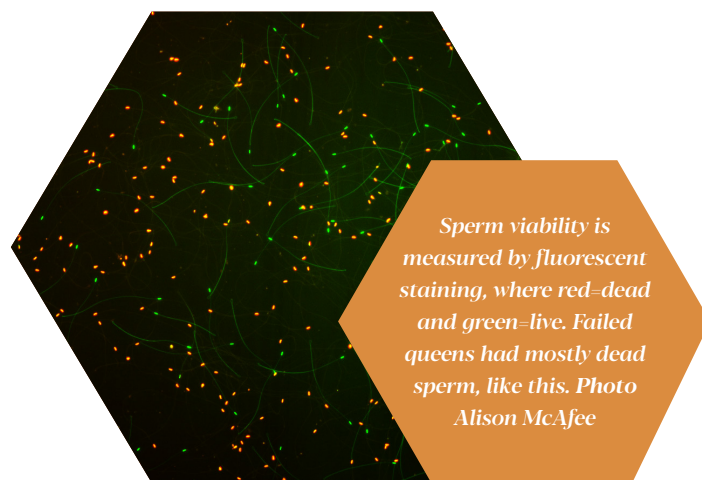
"Beekeepers have identified problem queens as a top management concern, but what's causing the problem is largely invisible. Queens go bad, and we don't know why," Tarpy says.

HEALTHY HIVES DEPEND ON HEALTHY QUEENS

Alison McAfee, a postdoctoral scientist at NC State and UBC, was the study's lead author. She explains that to have a healthy hive, honey bees depend on a healthy queen, the only female bee in a colony that can reproduce.

The queen mates with many males, but only early in life, storing all the sperm that she'll use in her lifetime in her spermatheca, an abdominal organ that looks like a tiny pearl. When the sperm begin to die, the queen can't produce as many fertilized eggs. That causes the colony's population to decline.

"Queens have the potential to live for five years, but these days, half the time queens (in managed honey bee colonies) are replaced within their first six months because they are failing," McAfee says.



"If a beekeeper is really lucky, a queen might live two years. Beekeepers need answers about why their queens are failing.

"The more we can find out about what is actually happening within these failed queens, the closer we can get to understanding why this queen failure is happening in the first place."

WHAT THE RESEARCHERS FOUND

In their research, McAfee, Tarpy and their colleagues found that queens that were failing reproductively had significantly fewer sperm than ones that were reproductively thriving. And a higher percentage of the sperm they did have were dead. The researchers also discovered that compared to reproductively healthy queen bees, the failed queens were more likely to have higher levels of two viruses – sacbrood virus and black queen cell virus.

"The high levels of these viruses and poor sperm viability made us interested in seeing if there was a trade-off happening in the honey bee queen," McAfee says.

"There's a classical hypothesis in reproductive biology that you can't do everything well, so there's a trade-off between immunity and being able to reproduce. It's been found in quite a few other organisms, including insects, that there are such trade-offs."

To find out if the same would be true with the honeybee queen, the researchers used a tool known as a mass spectrometer to gain a better picture of what was going on in the spermatheca of the healthy and failed queens. They identified 2,000 different proteins and determined which ones were linked to sperm viability.

One of the most significant proteins linked to sperm viability, McAfee says, is lysozyme. Lysozyme is an enzyme that's part of animals' immune systems.

"The queens with the highest sperm viability had the lowest abundance of lysozyme, indicating that they weren't investing resources in this kind of immune response.

"That supports this idea that there's a trade-off between the queens being able to fight off infections and being able to maintain their stored sperm."

FINDINGS ARE A FIRST STEP TOWARD SOLUTIONS

Tarpy says that the research could begin allowing researchers to find the cause of queen failure and find molecular tools that could "help identify bad queens upstream in the process before beekeepers use them and before they realize they're bad".

Right now, the cause of queen failure isn't clear.

"The underlying mechanisms could be disease. They could be pesticides. They could be improper nutrition," Tarpy says.

"We don't know, so we are working our way backward to identify the causes."

Once the causes are clearly understood, Tarpy adds, scientists can then work forward "to help beekeepers keep mortality levels down to sustainable levels and thus keep their colonies thriving. 🐝



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All at Sea

Views From Outside the Apiary



IAN FLETCHER

New Zealand is a nation of Islands. Our isolation is something we often mention but don't think about too much. We know that ships carry most of our imports and exports. In the pandemic we've seen how important aviation connections are. We learned last year that our pharmaceuticals come in by air. The government has had to subsidise Air New Zealand to keep these routes open.

For anything bulky or relatively low value, there's no alternative to ships. Shipping is dominated by big global companies and shipping costs reflect a global supply/demand balance.

So what? Since the end of 2020, world shipping prices have gone up sharply and actual physical shortages of containers have emerged in some markets, especially in Asia. European importers are reported choosing not to import because costs are so high, and a lot of Christmas stock missed its market in Europe – and there were shortages here too. It'll probably sort itself out, but it's a warning to us that we're dependent on shipping markets we don't control and can go wrong. Not a crisis but it wants watching.

Closer to home, New Zealand's isolation brings responsibility. Our economic zone (the fourth largest in the world) means we need to provide fisheries management and resource protection over a huge area. Fishing is often a kind of piracy if it's not supervised. If you add the search and rescue area (which is bigger) New Zealand's bit of the world adds up to about 8 per cent of the earth's surface. (Trivia question: which country has the biggest economic zone? No internet peeking! Answer at the bottom).

Yet we have lost our original maritime tradition, and now we have few of the resources, skills and commitment needed if we are to manage and police these responsibilities properly. As competition of control of the Antarctic heats up (it will), and if our plans for marine conservation in the Antarctic and the Pacific are serious (and they ought to be), then we need the resources and logistic effort to actually mean it and to be effective. Otherwise, it's all comforting gesture politics, but no more.

Maritime life is part of our heritage too. Both Maori and Europeans came here via traditions of ocean voyaging. We should think about the values that led them to those traditions and what we can learn from them.

France! (All those remote Islands).

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. 🐝

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From AFB Setback to President

CLUB CATCH-UP



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Gerard van Kuppeveldt recently took over as president of the North Canterbury Beekeepers Club following 25 years as a member, but his beekeeping career very nearly went south before it began.

"When I started I did not know the difference between a drone, a worker and a queen bee. So, I thought, before I get started, I will do an AFB course in Christchurch," van Kuppeveldt explains.

"I was also a member of the Christchurch club. So, I completed the course and thought I'd buy a nuc. I bought it off a professional member of the club selling queens and nucs. Six weeks later, I detected AFB in my brand spanking new hive. The fella who sold it to me had left the club in the meantime. That was a bad start."

That stroke of bad beekeeping fortune, which forced van Kuppeveldt to burn his hive, was in 1995 and luckily the North Canterbury club was able to help him get back on his feet.

Based in the backyard of a Kaiapoi joinery business, the club has had use of the workshop and the joiner's expertise.

"By that stage I was a member of the Kaiapoi club, so I was able to make my own base and lid for a new hive at the joinery workshop. I was back with bees pretty smartly after that and things worked out from there."



Twenty-five years of hobbyist beekeeping later, van Kuppeveldt decided to put up his hand for the president's role at the club last year. The first major task on the agenda is finding a new base for the hives and teaching sessions. The joinery business that has served the club so well is moving premises and so too must the club.

Members of the North Canterbury Beekeepers Club hail from around the variety of small towns in the area, such as Kaiapoi, Loburn, Ohoka and Rangiora, and there are a lot of lifestyle block owners in the area. So, the new president is confident they can find a suitable location to place their hives and run monthly demonstrations.

"The teaching is the most important part of the club, so we need an area where we can do that," van Kuppeveldt says.

As well as the inhive demonstrations each month, they generally meet up in between times to help keep the information flowing, something which comes naturally to van Kuppeveldt as a retired high school teacher.

"It is all part of the teaching. You can ask questions, get information off others and share it around. There are a lot of things we can do as a club, like provide demonstrations."

The new president started out listening intently at those demonstrations, but says he now leads some of them and his passion for beekeeping is keeping him invested in the club.

"It's a great hobby. The bees have a very special place in our life and are very important, but also, I love the way they go about things. I like to see them inside the hive and outside. Nearly every day, I sit down with my grandchild, if he is here, observing. It is fascinating."

The North Canterbury Beekeepers Club welcomes new members.

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Honeybee Research Symposium to Precede Conference



The second iteration of the New Zealand Honeybee Research Symposium will go ahead in person this year, a day prior to the Apiculture New Zealand (ApiNZ) National Conference, organisers have announced.

Wednesday 23 June will see a variety of leading researchers into honeybees take to the stage to present their work at the Rotorua Events Centre, the same venue where the ApiNZ conference will run for the following three days.

It is a format which the inaugural Symposium was supposed to follow in 2020. However, after that National Conference was cancelled due to Covid disruptions, the symposium moved online, hosted through Zoom on September 7 last year.

"For those people that are interested in the research, and we appreciate that is not all beekeepers, it is there. There will be a lot of science in it, but we are hoping it is accessible to anyone," event organiser and Victoria University of Wellington professor Dr Phil Lester says.

"We will put out a schedule a little bit beforehand, so people can see what is happening and when. We will likely be putting it on Zoom too, so if someone can't be there in person, they can link in.

"For those attending in-person there will likely be a small cost to help cover catering and the venue, which will be offset to some degree by sponsorship of the symposium. There will be no charge for those watching the symposium on-line."


The Zoom method of delivering the presentations was a success last year, but there will be significant benefits to hosting an in-person event, especially to the researchers themselves.

"Being on Zoom is good and you can get quite a bit out of it, and some people might be perfectly satisfied with that, but for a lot of scientists it is not necessarily what you get out of a presentation itself, it is being able to go and speak to the person afterwards. That can then lead to collaboration and dual research projects. Being able to talk to someone can be really beneficial," Lester says.

"Also, for someone who might be a bit reticent to ask a question of a researcher, while everyone else on the Zoom call or in the room can hear, they can ask their question one-on-one afterwards."

While researchers and scientists have other conferences they attend during the year, Lester says this is the only event specifically focusing on research into honeybees in New Zealand.

"At the moment it is fractured a bit. The Plant & Food Research people will go to a different set of conferences to the university folk, so hopefully we can get everyone together and some momentum behind it.

"I know researches doing similar things that don't really know each other. So, let's get together and not compete, but collaborate." 



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