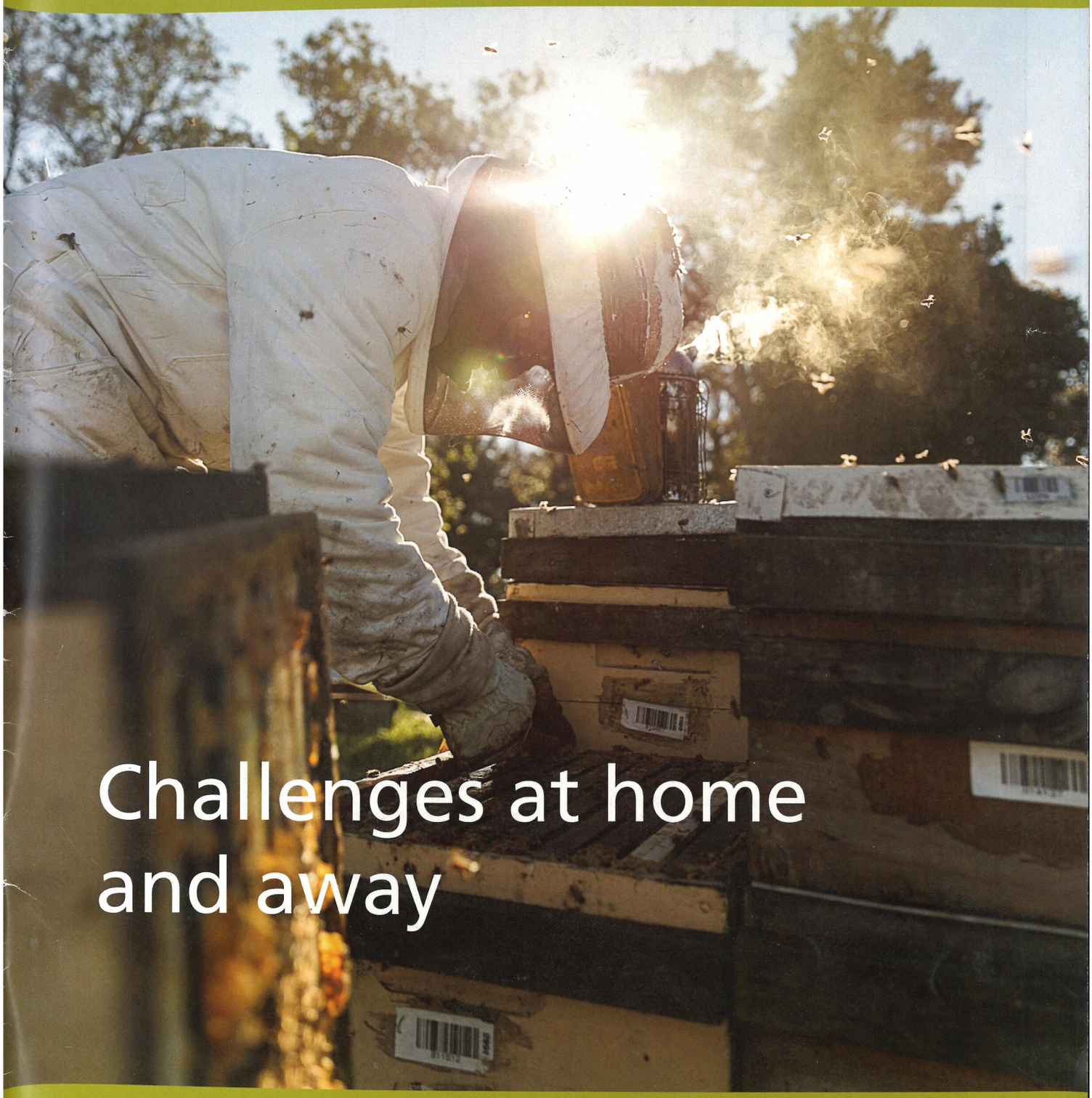
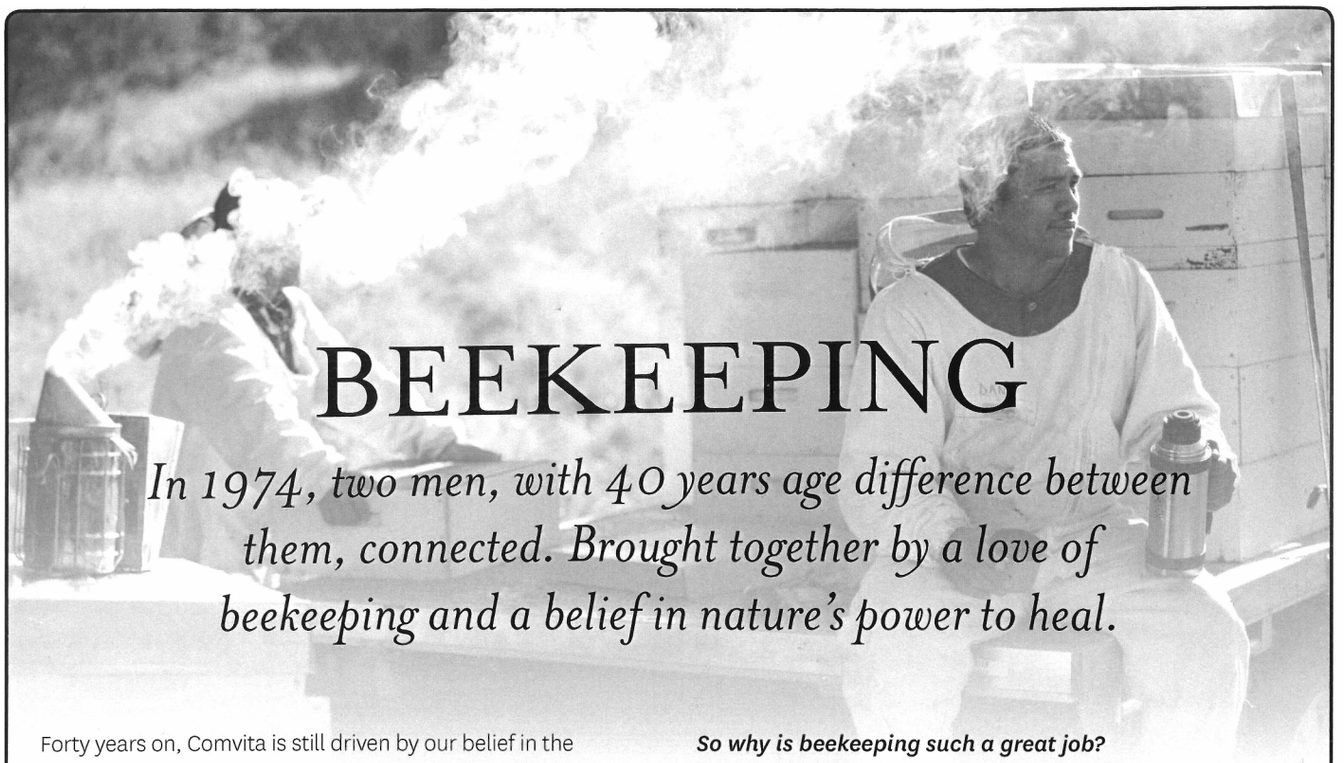
November 2014, Volume 22 No. 10

The NEW ZEALAND BeeKeeper



Challenges at home and away

- Busy month for beekeepers
- Tracheal mites information
- Book review: *Manuka*



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Beekeeper Kiwi Bee Waikato

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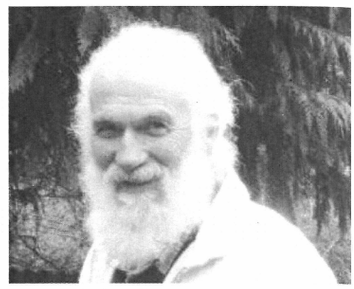
Challenges at home and away

By Ricki Leahy, NBA President



It's a concern that Small Hive Beetle has been found in a sentinel hive in the southwest of Italy.

This is the first incursion into Europe: how it arrived is not known, but it demonstrates the profound possibility of SHB getting to New Zealand.

SHB can travel by many vectors: as larvae in soil and as an adult amongst imported fruit or in other organic matter. It can very easily be transported by way of queens, package bees, via the trade of hive products such as raw beeswax and, interestingly, even by the shipment of honey drums. The UK is in a bit of a panic as queens and packages have been imported from Italy. Let's hope for their sake that they are still free of SHB. Honey processing plants are a congregation point for beetles in countries that have SHB.

Harvesting boxes of honey easily transports the beetles to these focal points directly from the apiary sites. SHB will breed and survive quite successfully and could fly onto and around pallets of packed honey (or even honey drums) that would potentially be exported from these premises.

We're lucky that we don't import honey or bee products, as it is a huge risk to our biosecurity. SHB could easily migrate here if imports were allowed. I believe SHB poses the largest threat to how we manage our bees. Perhaps there's a need to establish a more rigorous sentinel hive network in appropriate places around New Zealand to detect SHB (or other exotic incursions) at a very early stage.

On that note, members of the Executive Council will soon be meeting with MPI to continue the process of exploring the value proposition for beekeepers in GIA. We hope to have a detailed meeting in early November and will be in a position to provide an interim report to members sometime soon after that.

Unification update

You may be wondering about the status of the unification process within the industry. The process is under way but is taking time. The Interim Working Group has met twice as of mid-October. This group comprises representatives of sectors of our industry. They are working through a process to ascertain who else in the industry should and could be a part of this Working Group, and particularly to appoint an independent Chair.

As you will remember, we sent a survey to ascertain what our members were thinking regarding a more unified industry, including ways to fund the operating costs of our industry more adequately in the future. A vast majority wanted some form of amalgamation and most weren't too averse to some form of a levy.

You might be wondering why things seem to take so long. Those at conference would have become well aware of a strong variation of opinion of what constitutes the best form of unification or amalgamation. Each opinion has merit. We need to explore these opinions in detail to avoid making ad hoc and knee-jerk decisions that will leave us no better off than we are. There is also no gain in bowing to those who shout their opinions the loudest. We need to work through a proper process to reach a sensible consensus that we are all truly happy with. If we don't do that, how can we be unified? It would be a crying shame if we can't reach a consensus, so we need to be patient. It is for the Working Group to make any recommendations: I have no intention of predetermining any outcomes of the work that lies ahead for them.

I have been an NBA member all my beekeeping life. I have the best interests of the Association at heart and have no intention of doing anything that would harm it. But I believe that it is time for change. Membership associations like ours have to keep pace with changes in industry to remain relevant.

Our industry has changed considerably in the 100 years since the NBA was established. It's only right and proper that we take a good look at ourselves and assess whether the NBA is relevant in its current form or whether changes will better serve members. As your President, my main concern is to get the best outcome for our members. Having said that, of course it's very important for us all to attain the best outcome for the whole industry. After all, we are the one and only New Zealand beekeeping industry.

While this process is going on, the Management Team and the Executive are continuing to work through the myriad tasks that present themselves on a daily basis. We are watching your back by taking care of those tasks so you can get on with your beekeeping and the running of your businesses.

Membership

All members should have received their next year's membership invoice. Note that it is for a 13-month year so we can move the financial year to the end of March starting in 2017. This will better suit beekeepers in terms of business cash flow. For convenience, memberships can be paid by credit card via the shopping cart on our website www.nba.org.nz

Bee Health Survey

Our CEO, Daniel Paul, is busy seeking the industry share of funding for the proposed Bee Health Survey. (Oh for sufficient industry funding!) We need to get this up and running with an ample sampling and testing regime, coupled with positive beekeeper involvement.

A Bee Health Survey should be an ongoing operation to build a database as a tool to reference how and what affects the wellbeing of our bees in different situations. Knowledge will possibly be gained about such things, for instance, as how or why we are affected by any chemical use, or even the level of spread of resistance to varroa treatments in future. The survey will enable us to acquire a picture of the status of our livestock. Talking about livestock, I had better go and do that graft. Happy beekeeping.

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Tracheal mite: internal bee parasite

By Quentin Chollet, Apiculture Officer, AsureQuality Lincoln. E-mail Quentin.Chollet@asurequality.com

Tracheal mite was identified for the first time on the Isle of Wight in the English Channel in 1919. The first recorded outbreak in the USA was in 1984, and although all apparently infected hives were destroyed at the time, the pest continued to spread throughout that country.

Tracheal mite is now well established in all countries with a significant beekeeping industry, with the exception of New Zealand, Australia, Norway and Sweden (cf. Figure 1).

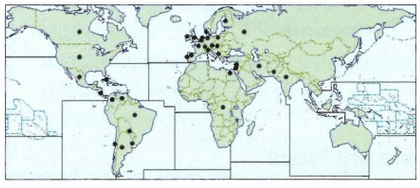

Figure 1: distribution of tracheal mite (Source: cabi.org).

Biology and life cycle

Tracheal mites (*Acarapis woodi*) are microscopic in size with a length between 120 and 190 µm (1.5 times the diameter of a human hair). They have oval bodies covered with a few long fine hairs, and their mouth looks like an elongated beak.

Tracheal mites spend almost their entire lifespan within the trachea of the honey bee, where they are attracted by the expired air coming from the first thoracic spiracle. They parasitise all three castes of adult bees

Figure 2: A. woodi *female in honeybee tracheal tube (Source: USDA).*

(workers, queens and drones) and appear to be restricted to the genus *Apis*.

The life cycle takes 19–21 days (Figure 3). Once mite eggs hatch, they progress through larval and nymph stages to mature adults within 14–15 days. After mating, female mites leave the trachea, exiting the bee through the breathing tubes and posting themselves on top of a body hair. Here, they wait for a contact with another young bee, move onto the new host and enter their trachea. They prefer to parasitise newly emerged bees (that they detect with smell) because the chitin of their first spiracle is still soft and the mite can chew through it to enter the trachea (Hamdan, 2014).

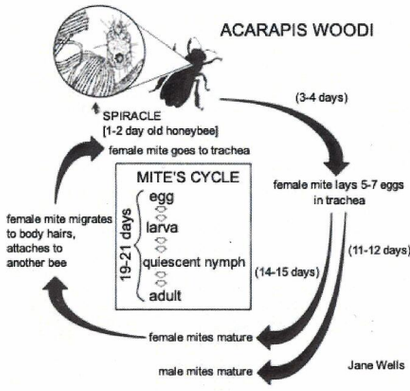

Figure 3: Life cycle of the tracheal mite of the honey bee (Source: University of Florida).

Most transfers occur at night and must be fast, as mites cannot survive out of a bee for more than a few hours. The female mite will then lay up to 5 to 7 eggs to complete another life cycle. In summer, one full life cycle is completed in each infected bee but this number can increase in wintering bees.

Adult mites feed on bee blood, which they access by puncturing the tracheal wall with their piercing mouthparts. During that process they are able to transmit secondary diseases and pathogens to bees.

Diagnosis

Although female mites can occasionally be found on the surface of bee bodies, *Acarapis woodi* is so small that there is no reliable field indicator to validate its presence. Severe infestation symptoms (crawling bees, dysentery, flying disabilities and swollen abdomen) are similar to other disease signs (especially *Nosema apis* and *Nosema ceranae*).

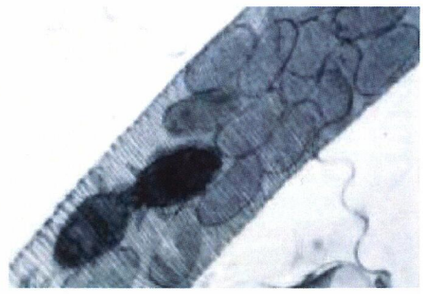

Figure 4: Tracheal mite adults and eggs inside honey bee trachea (Source: Clemson University).

Even though new serological and molecular identification methods are being developed, **dissection and observation under a microscope of a bee sample is the surest way to identify pest infestation.**

A healthy trachea is white or pale amber, and becomes darker with increasing mite levels. Heavily infested bees present tracheas with dark tissues or even totally black stains made of mites of all stages (the full procedure is presented by Dr Jamie Ellis online at https://www.youtube.com/watch?v=yv4zzGv_x_Q).

Effect on colonies

Because *Acarapis woodi* cannot be diagnosed in the field, it is rather hard to know if it is

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present or not, and if present, how large its effect is on bee colonies.

Even though the impact of *Acarapis woodi* infestation has been found to be substantial during the initial outbreak (the first two years of infestations in the USA were particularly severe, with some recorded losses of 90%), tracheal mite is considered to be a minor pest wherever it has become endemic. **Tracheal mite effect is weather dependent: serious damage can be encountered in cooler areas whilst warmer zones do not experience major impact.** Colonies are seldom seen with symptoms in summer or autumn.

At the bee level, mites clog the breathing tubes of honey bees, on which they also produce crust-like lesions as they feed. It has been estimated that they shorten the lives of infected individual *Apis mellifera* bees by a few days, and lead to a population decrease of approximately five percent of infected bee colonies (Sammataro, 2006).

Tracheal mite infestation leads to K-Wing symptoms by damaging flight muscles. Bees are then unable to fly and crawl paralysed in front the hive, presenting disjointed wings.

It is accepted within the industry that colonies with a higher than 30% infestation rate at the end of summer is very likely to die (Skinner & Parkman, n.d.). Tracheal mites affect overwintering capacities, because of:

- reduced thermoregulation capacities
- cluster shape of the colony makes transfer from host to host easier and mite population increases quickly
- stress due to infestation.

Infected queens have been proven to have a lower weight but do not show any different behaviour and usually continue to lay eggs normally.

Tracheal mite could also be responsible for lower honey yield and increased honey consumption, lower pollen collection, dysentery, smaller brood area, looser winter cluster, excessive swarming, higher bacterial and viral level and, eventually, death of the colony.

Control

Tracheal mite management should be based upon a combination of the following solutions.

Chemical

Being arthropods, tracheal mites and honey bees share many physiological processes. This complicates the quest for an adequate chemical that must be volatile enough to enter bee tracheae through air inhalation but only cause harm to the mites.

Menthol crystals are widely used for tracheal mite control during autumn. They are very temperature sensitive: they do not sublimate and release efficient gas under 21°C, and above 31°C the concentration of fumes is so high that it can repel the bees and the queen from the hive. Running melted menthol will also kill the brood in its path. Menthol should not be used during a flow to avoid tainted honey.

Formic acid has also been used to control tracheal mite.

Physical

Oil extender patties, made by mixing two parts sugar with one part vegetable shortening, are also commonly used. As bees get in touch with the patties they spread a thin coat of oil on them and their nest mates. This thin layer of oil appears to efficiently disturb the mite's ability to detect a new host. This method can help to reduce and maintain infestation rate at around 2%, but cannot eradicate the mite.

Beekeeping

Requeening each year ensures a good laying ratio (which has been proven to help resistance) and also results in a brood break, creating a shortage of hosts for the mites. Hives with young queens have been proven to cope better with infestations.

As tracheal mite cannot survive out of a bee for more than a few hours, it is considered safe to use infected gear after a week without live bees inside (Hood, 2014).

Tracheal mite and New Zealand

If tracheal mite were ever to be introduced into New Zealand, it would most likely enter via a swarm in a container or with smuggled queens. Tracheal mites have a great potential to spread, with flying bees between hives and/or apiaries, drifted colonies, or swarms. In North Carolina, 12 mite-free hives were put with 12 diseased hives in a remote location. After two years, only six hives were still alive and only one was not contaminated (Caron, 2000).

In the event of the introduction of tracheal mite into New Zealand, breeders would need to work on resistant bee strains, as has been done successfully in the USA and Europe. The behavioural factor to select on is called 'self-grooming' and represents the ability of the bees to remove mites from other bees. The Buckfast line is one of the most famous breeding programmes for resistant stock: it has now been commercialised for almost a century! Several programmes around the world have showed good results.

AsureQuality Limited runs the Exotic Surveillance Programme on behalf of MPI each year and part of this programme includes collecting bee samples for tracheal mite testing. Beekeepers' awareness and vigilance is crucial for the detection of the mite early enough to attempt eradication.

If beekeepers suspect that their hives have tracheal mite, or other exotic pests or diseases, they should report these findings **immediately** through the **0800 809 966 MPI Hotline.** An AsureQuality Limited apiculture officer will follow up on every report, if requested to do so by MPI.

Sources and further reading

Refer to nba.org.nz

Erratum

In the October journal, the article 'Don't let EFB get into NZ!' was mistakenly attributed as being written by Marco Gonzalez.

The author of the article is Quentin Chollet, Apiculture Officer, AsureQuality Limited, Lincoln. Our apologies to Quentin.

The error has been corrected in the version that will appear on the NBA website, and Quentin Chollet will be attributed as the author in the articles index for 2014 when it is published.

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AsureQuality Limited report to Conference

By Byron Taylor, Apiculture Officer

The following report was presented to the AGM of the NBA on 26 June 2014.

Personnel

Sheryl Bertram is the new Apiary Registrar for the North Island replacing Bob Derry, who has retired. *[Editor's note: information for Apiculture Officers and Registrars of Apiaries is provided on page 10.*

The following information contains excerpts from the report prepared for the Ministry for Primary Industries' 2014 Apiculture Monitoring report (currently in review) and has been reprinted with kind permission from MPI.

Hive numbers continued to increase

Hive numbers increased by over 55,000 hives or 12 percent from 2013, which was much higher than the 29,000 hives or 7 percent increase observed between 2012 and 2013 (Table 1). Registered beekeeper numbers also increased by another 12% this season from 4,279 to 4,814, which is getting very close to pre-varroa levels.

The ratio of beekeepers between islands continues to move in favour of the North Island with 72% of new beekeeper registrations in the last 12 months being North Island-based. The largest increase in hive numbers was also in the North Island, which recorded a 16% increase, compared with 3.5% in the South Island (Figure 1). It is interesting to note that the number of South Island beekeepers in the 501 to 1000-hive group has reduced by 16% in the last 12 months. This could possibly be the result of the varroa mite as a similar pattern was

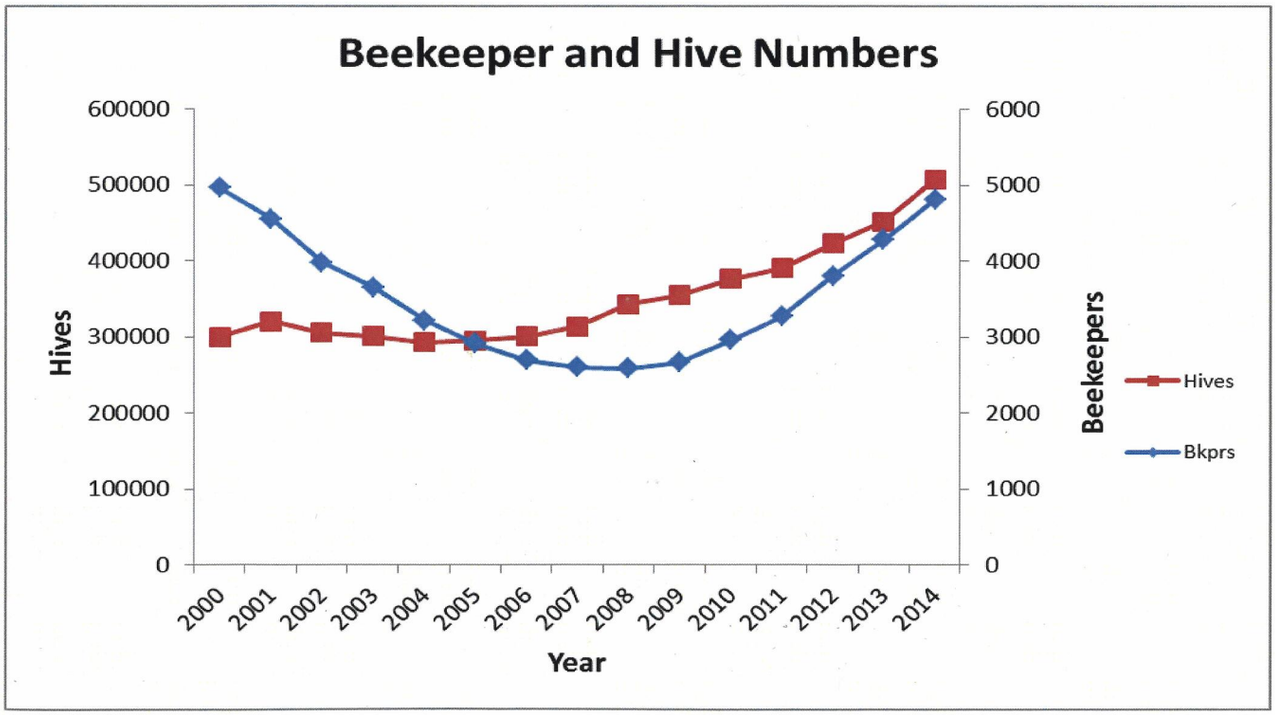
Continued on page 13

Table 1:New Zealand beekeeper, apiary and hive statistics as at June 2014

	Beekeepers	Apiaries	Hives
Northland, Auckland, Hauraki Plains	1,201	5,636	79,120
Waikato, King Country, Taupo	405	3,280	70,884
Coromandel, Bay of Plenty, Rotorua, Poverty Bay	494	4,450	95,145
Manawatu, Taranaki, Hawke's Bay, Wairarapa, Wellington	1,048	6,894	117,670
Marlborough, Nelson, West Coast	396	2,573	35,714
Canterbury, Kaikoura	745	4,386	59,906
Otago, Southland	525	3,449	48,808
New Zealand	**4,814**	**30,668**	**507,247**

Source: AsureQuality Limited

Figure 1: Registered beekeeper numbers and hives: 2000–2014
(Varroa was discovered in Auckland in April 2000)



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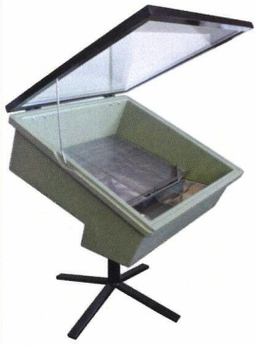

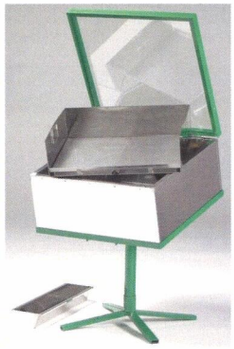

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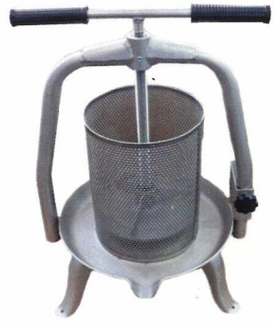

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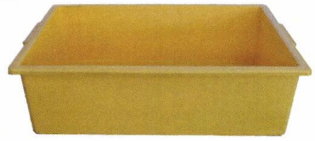

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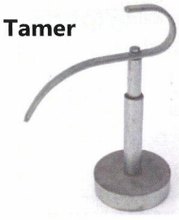

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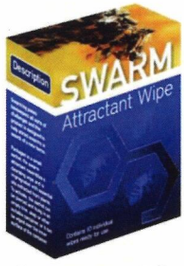

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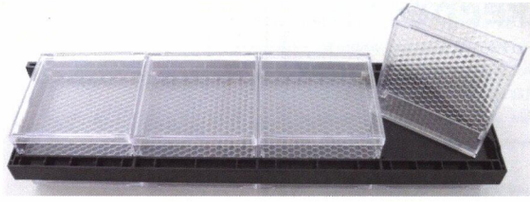

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Continued from page 11

Table 2: New Zealand honey crop 2009 to 2014 in tonnes (t)

Year ended 30 June	2009 (t)	2010 (t)	2011 (t)	2012 (t)	2013(t)	2014(t)	6-year average (t)
Northland, Auckland, Hauraki Plains	1,756	1,285	1,992	1,195	1,906	2,580	1,786
Waikato, King Country, Taupo	1,864	1,584	1,410	1,533	2,462	2,980	1,972
Bay of Plenty, Rotorua, Coromandel, Poverty Bay	2,250	2,376	1,423	845	3,271	3,524	2,282
Hawke's Bay, Taranaki, Manawatu, Wairarapa	2,082	2,318	1,963	2,014	4,127	4,122	2,771
Marlborough, Nelson, West Coast	1,140	1,400	470	940	1,112	1,336	1,066
Canterbury, Kaikoura	1,718	2,200	1,045	1,650	2,816	1,797	1,871
Otago, Southland	1,755	1,390	1,144	2,205	2,129	1,269	1,649
New Zealand	**12,565**	**12,553**	**9,447**	**10,382**	**17,823**	**17,608**	**13,396**
Yield/hive (kg)	34.7	33.3	24.2	24.6	39.3	34.7	31.8

Source: AsureQuality Limited

seen in the North Island. The increase in hive numbers in the North Island is being supported by both natural increase and by the purchase of hives from South Island beekeeping operations.

Honey production: almost another New Zealand record

The 2013–2014 season produced a near-record honey crop of 17,608 tonnes, 215 tonnes short of last year's record. North Island beekeepers did better than their South Island counterparts, benefiting from a generally favourable spring in most areas, and nectar yields extending well into the autumn. Rewarewa yields were particularly good, with many beekeepers commenting that it was the best they had seen in recent history. Manuka was variable depending on the area. Regional honey production figures for the past six years are summarised in Table 2. In the South Island, the Nelson, Marlborough and West Coast areas outperformed the more southerly provinces with good manuka yields in many areas and a good kamahi flow. Southern rata did not flower well, which prevented an even better result. Despite this, the crop in this area was 25% above the six-year average.

While total honey production remained at relatively high levels, the yield per hive was down 12% on last year. The production figure was bolstered by another significant increase in the number of registered hives, particularly in the North Island. Total hive numbers increased by over 55,000 (12%) this beekeeping season. This increase is due to the strong demand for manuka honey and is increasingly being driven by corporate or iwi or landowner investment in beekeeping enterprises. In addition to these situations, many beekeepers are now entering the industry with 50–500 hives and this group has seen a significant increase in both beekeeper and hive numbers over the last 12 months.

Honey crops in the North Island were up 44–54% on the six-year average. In the South, the Nelson, Marlborough area was up 25% on the six-year average with the balance of the South Island down by between 4% and 23%. The difference between production in the North and South Islands was expected, with the North producing 76% of the national crop off 72% of the hives. Average hive yield varied considerably by area ranging from 26kg/hive in Otago/Southland through to 42kg/hive in the Waikato, King Country, Taupo area.

Exports of honey to over 40 countries for the year ending 31 December 2013 totalled 8,758 tonnes, which was an increase of 1,049 tonnes (13.6 percent) on 2012. Sixty-seven percent of export volume (5860 tonnes) was retail packed and was up 8% on the 2012 figure. This resulted in a 29% increase in value from NZ$100 million to $129 million and shows that the return per kilo on our value added product is increasing.

Live bee exports to Canada increased 30 percent on 2012

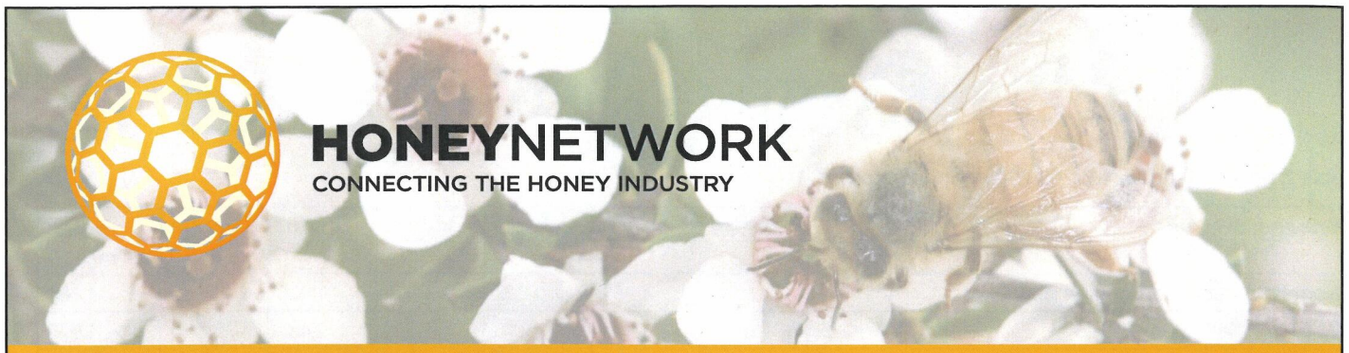
2014 was another strong year for live bee exports, with a record 37,704 1kg equivalent packages sent to Canada. This was an increase of 16% over the previous year, which itself was a record. A package of bees generally consists of one kilogram of bees housed within a ventilated cardboard tube or a cardboard and mesh screened box about the size of a shoebox. The package may, or may not, hold a supply of sugar syrup and a queen bee in a cage.

Table 3: *Exports of live bees to June 2014

	**2007	2008	2009	2010	2011	2012	2013	2014
One-kilogram packages	8,988	22,500	30,083	34,754	31,558	24,952	32,511	37,704
Queens	10,172	3,000	7,000	7,586	14,022	7,516	3,680	4,817

Source: AsureQuality Limited

* All the packages and the majority of the queen bees go to Canada.
** The exporting season is late January to May.
* The 6-year average is 31,927 one-kilogram packages.



Online bulk honey auctions

ALL NEW PRICE TRACKER

Creating pricing transparency in New Zealand's honey industry has always been a goal for the Honey Network. With the launch of the Price Tracker, you can now see what product has sold for what price and when. Each point on the graph also shows the test results for each listing so you can make more accurate comparisons.

You do not need to be a registered member to view this information.

CONNECT WITH MORE BUYERS

The Honey Network now has over 100 verified New Zealand registered companies sourcing different varieties and grades of honey at different times of the year. Some are looking for packed product, some want just a couple of drums, and some would happily take a full container load. If you have product that you need to move and your existing buyers are not in a position to take it, we can promote your product to a large audience, get you the current market value for your honey and have full payment in your bank account within 5 days of the auction closing!*

SUPPLEMENT YOUR EXISTING SUPPLY NETWORK

Many companies are now turning to the Honey Network as a way to supplement their existing supply channels. We appreciate that many of our members prefer to remain anonymous throughout the bidding process so random usernames are allocated to keep identities secure.

USE THE NETWORK AND WIN A TRIP TO APIMONDIA!

For every 250kgs of honey traded through the Honey Network, both the buyer and seller receive a chance to win a trip to the next Apimondia Congress in Seoul, Korea.

44th International Apimondia Congress
15th to 20th September 2015, South Korea

*In order to attract more potential buyers, different payment options can be offered while retaining security of your product.

www.honeynetwork.com

News from Wanganui Beekeepers' Club

By Anne Hulme

We involved the local primary schools again this year with our efforts for Bee Aware Month.

This time we had a good team of members visiting the schools and leaving pre-cut bookmarks for the children to colour and write some interesting facts about bees. This was arranged as a competition and was judged according to the children's ages. The results were posted on display boards, which were there for the public to see at our promotional stall at the Riverside Saturday Market on 20 October.

Gaylene Reid answers the questions, with Bruce Churton in the checked shirt. Photo: Graham Pearson.

We also had a glass hive, honey tasting, display of bee-friendly trees and members making frames all morning. Our members were very supportive and donated their time as well as honey for the prizes.

All went well according to our plans until market day, then the rain came down in buckets and the wind blew, spoiling the display board, but the worst thing was that only one child came to pick up her honey prize. A few members of the public came and chatted to the team on duty, but in general it was a lot of work from a dedicated team that was spoilt by the weather. However, the schools benefited and we did get our message out to the younger generation.

Weak El Niño forecast

Abridged from information provided by NIWA

During September 2014, borderline El Niño conditions returned in the Pacific. International guidance indicates the development of a weak El Niño over the next three months is likely.

Outlook summary

October–December temperatures are likely (35–40% chance) to be average or above average for the east of the North Island, but are likely (40% chance) to be average or below average for the southwest and east of the South Island. Temperatures are likely (45–50% chance) to be near average for remaining regions of New Zealand.

October–December rainfall is likely (45–50% chance) to be in the near normal range for the north and west of the North Island, and likely (35–40% chance) to be normal or below normal in the east of the North Island.

Normal or above normal rainfall is likely (40% chance) in all South Island regions.

Soil moisture levels and river flows are most likely (40–45% chance) to be in their near normal ranges for all regions of New Zealand.

Detecting DHA-adulterated honey

By Peter Molan

In the article by Karyne Rogers, Merilyn Manley-Harris and Megan Granger in the September 2014 issue of *The New Zealand BeeKeeper*, it was said that adulteration of honey by addition of dihydroxyacetone (DHA) could not be detected by chemical or isotopic means.

However, that does not mean that it cannot be detected. It can be easily detected by the simple technique of measuring the thixotropy of honey.

A near-unique feature of manuka honey is that it is thixotropic. (Ling heather honey is also thixotropic, but to a lesser degree.) The other unique feature of manuka honey is its content of a substantial level of methylgyoxal (MG) and its precursor dihydroxyacetone (DHA). If the MG and DHA are present in substantial levels in honey naturally, they will thus be in a honey that is manuka honey. If either chemical is present in substantial levels in a honey that is not thixotropic, then they will have been added as an adulterant to a honey other than manuka honey.

It was found in the PhD thesis study of Dr Jonathan Stephens (http://researchcommons.waikato.ac.nz/handle/10289/2655) that the level of non-peroxide antibacterial activity (NPA) in manuka honey depends to some degree on the variety of manuka tree that it has been produced from, but primarily on the proportion of manuka nectar in the honey. It was found that after allowing for dilution by other nectar sources, the range of NPA in the honey from the different varieties of manuka tree was 8–16 in freshly collected 100% manuka honey (approximately equivalent to a level of MG of 180 to 570 mg/kg). This level of NPA would be expected to double to 16–32 (MG at 600–1,800 mg/kg) on storage.

The actual level in 100% manuka honey depends on the region in which the honey is produced. The highest level comes from the variety of manuka that grows in Northland, and the lowest from the variety that grows in Hawke's Bay. For each region there is a level of MG naturally present, after the honey has matured to a ratio of DHA:MG of 2:1, that is characteristic of 100% manuka honey from that region (e.g., 1,800 mg/kg for honey from Northland, 600 mg/kg from Hawke's Bay, 750 mg/kg from the Wairarapa).

The thixotropy, when measured, was found to be proportional to the percentage of manuka honey in blends of manuka honey with a range of other types of honey (Chapter 5 in the PhD thesis of Dr Jonathan Stephens). Therefore it can be easily checked if honeys have had the level of MG increased by adding MG or DHA as an adulterant. It simply requires the thixotropy of the honey to be measured to determine the percentage of manuka source in the honey. The level of MG should be in line with what is expected for a honey from a particular region with a particular percentage of manuka source in it.

If the level of MG is higher than expected, it shows that there has been adulteration. For example, if the thixotropy shows that a honey from Hawke's Bay is 75% manuka source, then the level of MG should be 450 mg/kg; and if the thixotropy shows that a honey from Northland is 50% manuka source, then the level of MG should be 900 mg/kg. If the level of MG in these honeys is found to be higher than these expected values then adulteration is indicated.

There is some scope for falsification if the region in which the honey is produced is not known, but the scope for this is limited to a maximum of doubling the activity by adding DHA to a Hawke's Bay honey and claiming that it is a honey from Northland. This sort of adulteration is not simply done because only some of the DHA is converted to MG (some disappears), so in allowing for this it is likely that too much DHA may be added and the excess MG will then be detectable as being out of line with the thixotropy. Adulteration with MG could be done more exactly, but adulteration with MG can be detected by chemical means. If the region of production of the honey can be verified, then there will be no scope for undetectable increasing of the activity level by addition of DHA. Research is currently under way looking for differences in the chemical profile of honey from different varieties of manuka. It may already be possible to verify the region of production by the system that Oritain uses for isotopic and trace element analyses.

Falsification is possible to a limited degree by adding DHA to ling heather honey, which is thixotropic. Again, addition of too much DHA will be detectable. But creating a thixotropic honey by adding DHA to ling heather honey is readily detectable because ling heather honey can be easily identified by gas chromatography (Tan et al., 1989)

Attempted falsification by addition of viscosity-increasing agents to honey will not succeed. Although manuka honey if not 'pricked' is so viscous that it cannot be centrifuged out of the comb, thixotropy is quite distinct from viscosity. A thixotropic substance becomes very viscous because it gels, but the gel is easily broken by physical disturbance and then the viscosity is lost. Gelling agents used as thickeners in foods do not give thixotropy, so the viscosity is retained when there is physical disturbance. When the thixotropy of honey is measured, the instrument used records the drag of the viscosity on a slowly rotating spindle. Simply repeating the measurement at a higher speed of rotation will show whether the viscosity is destroyed by this disturbance (and thus is thixotropy) or is retained (and thus is fraudulent). The identity of the substance in manuka honey responsible for the thixotropy is not known.

You may have suspicions about a honey which has high activity so should have a high proportion of manuka source, but does

not look or taste right to be that. A simple check is to gently tip a jar of the honey on its side after it has been left upright at 37°C undisturbed for two days for the gel to form. If it is genuine, then the gelled honey will not slump towards the lid. Banging the jar to break the gel will make the honey become fluid if the gel is due to natural thixotropy and not to adulteration with a gelling agent.

Adulteration is not only illegal but also puts the whole industry at risk. It cannot be done without being detected. The old biblical admonishment about adultery in Proverbs 6:32 ("He who commits adultery lacks sense; he who does it destroys himself.") is just as applicable to adulteration.

Reference

Tan, S. T., Wilkins, A. L., et al. (1989). Extractives from New Zealand unifloral honeys. 2. Degraded carotenoids and other substances from heather honey. *Journal of Agricultural and Food Chemistry, 37*(5): 1217–1221.

Response from Megan Grainger and Merilyn Manley-Harris, Department of Chemistry, University of Waikato, Hamilton, New Zealand

Peter Molan has indicated that thixotropy can be used to easily detect if a honey has been adulterated by addition of DHA. We wish to express some reservations about this assumption.

Dr Molan's argument is based upon the work described in the doctoral thesis of Jonathan Stephens (2006), which was published some two years before it was known that non-peroxide activity (NPA) derives primarily from the presence of unusually high levels of methylglyoxal (MG) and that the MG derives from unusually high levels of dihydroxyacetone (DHA) in the immature honey. Stephens related NPA of mānuka honeys to the regions from which the honey had been derived; he did not, as implied by Dr Molan's article, relate MG content to the region of origin. The thesis further identified that thixotropy was proportional to the content of mānuka in blends. Dr Molan claims that there is an activity characteristic of a particular region (and hence an associated thixotropy) and that adulteration could be detected if thixotropy rose above this region-specific level.
However, the weakness of this argument is precisely the weakness identified by the MPI science panel, which is that it is not possible to identify a honey as originating solely from mānuka; indeed, MPI is initiating a research programme to address this need. Additionally, Stephens only sampled from one season (2001–2002) but variation is observed by beekeepers from one season to the next at the same sites.

No study of DHA content of nectar was reported in Stephens's thesis, understandably since at that time the connection was unknown. However, our recent study of nectar (*J. Agric. Food Chem.* In press) has shown seasonal as well as intra-regional variation in DHA content of nectar. This casts doubts upon the assumption that a regional level of MG content can be accurately predicted.

Our own research has shown that not all of the dihydroxyacetone in an immature honey is either converted to MG or remains unchanged to result in the 2:1 ratio mentioned by Dr Molan. Varying proportions of DHA and MG, dependent upon temperature of storage, are consumed by irreversible side reactions with other compounds in the honey, for example, amino acids. The products of these reactions may well affect the physical behaviour of the honey, for example, viscosity, thixotropy and colour.

It may well be that thixotropy can provide an easy method for the detection of adulteration but at this time there is insufficient published science to support the argument. Further research needs to be undertaken to discover the direct link between content of MG and DHA and physical properties.

Response from Karyne Rogers, GNS Science:

We agree that honey containing higher DHA or MG contents without thixotropy may indicate adulteration, but as yet the research to verify this claim has not been made. However, I refer Dr Molan back to our final statement, which simply emphasises the high risk when mānuka honey is traded primarily on DHA or MG content alone. This risk is now mostly mitigated by the ongoing research funded by MPI and the interim labelling guide for mānuka honey introduced on 30 July 2014.

Beekeeping gold rush

By Gary Jeffery

At present we are being bombarded with articles saying how much we as beekeepers are making from manuka honey.

Like the gold rushes of the past, much of what we hear is based more on hearsay than actual facts. However, like in the gold rush days, new prospectors are streaming into this new field, expecting to make their fortunes as a result. As usual, it is the middlemen making the profits.

One of the problems is that the optimistic view of manuka honey income is putting dollar signs in front of the new beekeeper's eyes like Disney's Scrooge McDuck of old, and the established ethics of beekeeping and beekeepers are being pushed to one side. Sometimes it is the older, more established beekeepers involved with this as well, to the extent that some are offering often-inflated payments to farmers to push established beekeepers off their sites to gain more territory. They should know better as in the long term, claim jumpers get hurt as much as those they replace.

With greed becoming the norm, manuka honey is fast being priced out of the reach of the normal domestic customer. When I see a 250 gm jar of 20%+ manuka retailing at $72, a collapse of the market is imminent.

Also the activity shown gives the buyer the impression that the activity if higher must be better, but in fact a 10% activity is just

as effective as a higher activity. It is human nature to believe that a higher number must be better.

Also some beekeepers are being paid on active points so achieve it by various skulduggery, such as adding extra heat or diluting with non-manuka honey to have more to sell.

Of course, there are more ways to skin a cat than the abovementioned methods. Honey also has an antibacterial effect relating to the amount of hydrogen peroxide in it. This is quite effective for many conditions. Some are obviously putting on the total activity percentage instead of the manuka percentage and buyers do not know the difference.

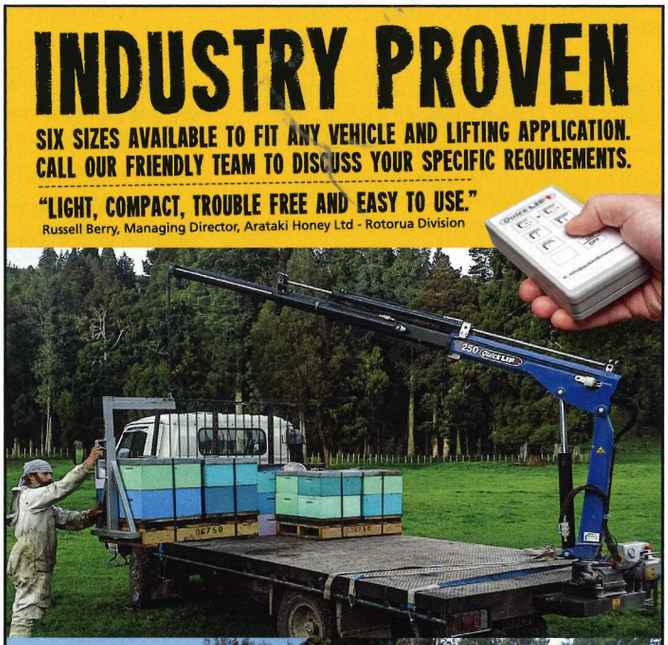
In our district, large areas of manuka are now under grass as dairying expands. Also, in the past this district had an American foulbrood history that had virtually disappeared until the advent of varroa mites and the disappearance of wasps due to the widespread use of 1080 for possums two years ago. The 1080 killed the wasps eating the carcases, which in the past had eaten the honey in dying wild hives and brought us up with a halt, with a widespread disease outbreak dropping our hive numbers considerably. We have had to change our beekeeping to try to avoid disease areas for much of the year, especially in the main manuka areas, where bees were in the adjacent forests.

The replacing of manuka with grass provides little in the way of pasture flowers for the bees. The retention of a few odd corners in manuka does help the economics of beekeeping on those farms. With the drop in milk prices, it may again be a better option to retain clovers for nitrogen fixation and go away from the use of urea for pasture stimulation. It could be a win-win situation for both the beekeeper and farmer.

What of the future? Hopefully new (and some old) beekeepers will again realise that established beekeepers should be left undisturbed as in the past. Also overstocking will see everyone with uneconomical crops. Also, stocking shops with reasonably priced manuka honey will keep the overall market viable again. If you want to really go for the high-priced end of the market, change your practices to suit medicinal production as present antibiotics are becoming less effective.

Looking further ahead, after manuka, beech honeydew could take its place, as honeydew is very high in antioxidants. Then hopefully we will not see a repeat 'gold rush' for honeydew. Good honeydew production depends on the availability of plenty of pollen in both the autumn and spring, with gorse filling that niche ideally. Following a bad summer drought, gorse may not flower in the autumn and hives will die over the following winter. I can just imagine the planting of gorse around beech forest to support the new honeydew industry? It might resemble the early pioneers planting gorse hedges.

Although not always recognised, all honey is not just a sugary food. It also contains traces of many minerals. In our area traces of gold are also found, so perhaps talking about the gold rush of old is not too far off the topic.



Manuka, written by Cliff Van Eaton

Reviewed by Frank Lindsay, NBA Life Member

This is a well-researched, superbly written book.

It's easy to read and gives the impression that the writer is talking to you. All the complicated scientific terms normally associated with chemistry and how they react is put into everyday language.

The book contains eight chapters and an epilogue. It starts with a quick history and gives a background to New Zealand flora and honeys and how Dr Peter Molan's interest in manuka honey was first established.

Chapter two is all about bees: every beekeeper should read and learn from it.

Chapter three covers the history of beekeeping in New Zealand and briefly touches on the characters involved in the manuka story.

Chapter four is where the story really takes off. Bill Floyd knew how to promote manuka honey. His excitement was infectious and swept the industry along but his services were dispensed with because of internal politics within the NBA.

The rest of the chapters tell the story.

The epilogue was written for the uninitiated to give an understanding of beekeeping and where it's going.

This book should give beekeepers an insight in what they are producing and how important it is to process it with care. Regulations are changing and those who produce a pure product will benefit in the long run.

I recommend this book to all beekeepers and anybody else interested in honey and its properties. It's a must for the Christmas list.

Additional comments

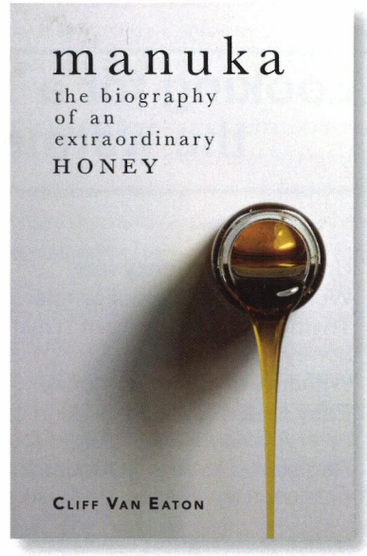
I must confess that I have lived through all this and have met a lot of the characters.

I came into the industry as a hobby beekeeper in the early 1970s and attended the 1974 honey seminar in Taupo, which as stated in the book was a breakthrough in New Zealand beekeeping.

The Honey Marketing Authority (HMA) was a thorn in the side of North Island beekeepers, and caused animosity between North and South Island beekeepers because of honey prices.

During the 1990s and from 2000 onwards, Dr Peter Molan was often one of the highlights of the seminar days at NBA conferences. Each year he would tell us where his research was leading and what marvellous things he'd found out about manuka honey. This provided a real uplift for the industry but it took 20 years of hard work by Peter, a number of packers and exporters to get to where the industry is today.

What is not mentioned from a beekeeper's point of view (and is quickly being learnt by new entrants to the industry) is the fluctuation in manuka honey supply from year to year, and that without pollination or other honey income, a lot of beekeepers would have been bankrupted when the manuka failed to produce due to cool or wet weather, sometimes for a couple of years in a row.



Manuka: the biography of an extraordinary honey, by Cliff Van Eaton
Exisle Publishing, 256 pages, paperback RRP $34.99
ISBN 978-1-77559-163-4

Honey smugglers caught

Two would-be honey smugglers have been turned back on arrival at Auckland airport. Border officials sent the two Ukrainian air passengers home on Friday after they tried to smuggle honey and bee pollen into the country.

The man and woman had arrived in NZ to work at a beekeeping operation in the lower North Island. MPI spokesman Craig Hughes said untreated honey products were a major biosecurity risk with the potential to carry diseases that could devastate New Zealand's beekeeping industry.

Hughes said the couple had failed to declare they were carrying any food or other items of biosecurity risk when questioned by MPI staff. "They had declared they were apiarists, which is a high-risk occupation for us. That's one of the reasons why our inspectors conducted the search." He said the couple stated the honey products were for personal use after they were found. "The fact they were taking the products to a beekeeping area is just mind-boggling." As a result of the find, immigration officials refused the couple permission to enter the country. They were sent home on the first available flight.

[Editor's note: Employers should warn overseas staff not to bring into the country any honey, bee products or used beekeeping gear.]

Source: Adapted from Stuff.co.nz, 21 October 2014.

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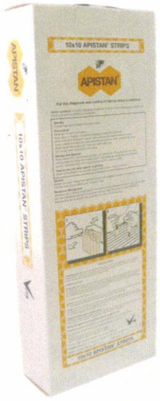

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Auckland Branch

The weatherman has certainly thrown his entire bag of tricks at us over the past few weeks. If we are confused about which season it is, imagine how the bees are feeling!

On 18 September we had a well-attended branch meeting for a discussion of the remits passed at Conference, and Don MacLeod spoke to us about pesticides. Kim Singleton told us about the progress being made towards unifying the beekeeping fraternity. The steering committee is setting out to map a way forward.

Don MacLeod gave a most interesting talk, and stressed that pesticides are everywhere—there's no escaping them. Without them, our food supply would be seriously compromised. Don believes they are essential to provide an adequate food supply for the world population. The important fact is that pesticides must be used with care and caution, and strictly according to instructions. There have been mistakes in the past, and ongoing vigilance is essential. He mentioned that there are "dead areas" in New Zealand where beekeeping is impossible, and Don believes that they are caused by residues from chemicals applied to crops in those areas in the past.

Beekeepers need to make themselves known to the farmers and horticulturists in the areas surrounding their apiaries, and (a) find out what chemicals they are using; and (b) alert the farmers and horticulturists to the damage careless use of chemicals can cause to bees.

It's been blowing a gale and raining all morning and now, at 3.30pm the sun has come out. Perhaps we'll be able to snatch an hour or two of beekeeping before nightfall. Happy beekeeping, all!

- Helen Sinnock

Waikato Branch

In early October it was cold, windy and wet with snow on the Desert Road—chilling-of-the-bones weather. A week later it's been sunny, with temperatures in the 20s, willows out, bees flying like there's no tomorrow and making swarm cells (the beasts!)

We're queen raising and splitting in earnest now. Bee trucks are going up and down the road with their sugar tanks on; bees in north and west coast manuka sites and other bees are getting podged up for pollination.

Manuka Health has recently moved to a state of the art processing centre just outside of Te Awamutu: looks fab. It's all go for Waikato beekeepers!

- Barbara Cahalane

Hawke's Bay Branch

Pollination is running later than normal and very spread out this year due to lack of winter chilling, followed by a cold spring. Hives have been picking up markedly in the last few weeks, which is just as well as many were weaker than normal. More sugar is being fed than normal because of the poor weather. My father said the other day that it was the second worst August that he can remember and he can remember a few. September weather was pretty indifferent but still a big improvement.

- John Berry, Branch President

Nelson Branch

As I type this, there is snow on the Richmond hills and in Takaka: so much for the lovely warm spring we started with. I am unsure how this recent weather will affect the fruit crops currently in bloom and the associated pollination from our bees. Time will tell.

On a more positive note, I have heard that some have already managed to get some honeydew collected, which is great. Most beehives appear to be doing well with brood building up well. Given many hives came through the winter with good stocks, the swarm season is well and truly upon us, with reports most days of swarms in the district that need collecting.

The Nelson Beekeepers Club recent meeting was well attended with over 50 enthusiastic members. Initial pre-meeting frame and brood box building provided some hands-on carpentry. The main part of the night had presentations on AFB identification and treatment, exotic bee diseases and pests (thanks to Marco Gonzalez for making the presentation available) and discussions on swarm collection, management and prevention. This group is also getting organised for the annual A&P show on 22–23 November where they will have a 'Bee Tent' with an exciting range of all things to do with bees and beekeeping.

That's about it, busy time for most beekeepers, so wish you all good luck and bee safe (sorry for the pun) for all those doing nocturnal moves for pollination.

- Jason Smith

Canterbury Branch

The Branch is holding a field day on Sunday, 23 November at the Hornby Working Men's Club.

The focus is on varroa treatments and how beekeepers are applying them for best results. It should make for an informative and enjoyable day, so mark your calendar.

- Brian Lancaster, Branch President

We want your photos!

The Publications Committee welcomes photos for the journal. Pop a camera in the truck and snap away when you find something interesting. Please provide a caption and the name of the photographer so we can credit them.

If you're thinking big (such as a potential front cover photo, which we always need), these need to be as large as possible (3MB or larger if possible), in portrait format (vertical rather than horizontal), and ideally 300 dpi (dots per square inch). Regular digital photos are only 72 dpi, so are not suitable for the front cover.

Email them to editor@nba.org.nz

A busy month ahead

By Frank Lindsay, NBA Life Member

As of mid-October, the weather we generally expect during the first two weeks of October has finally arrived: late but much appreciated.

The snow from those late cold fronts has cleared from the ranges and the temperature is now touching 20°C.

Distinctive perfumes are coming from the bush sources now starting to flower. Lemonwood or tarata (*Pittosporum eugenioides*) seems to be more prevalent at night, while the heavy perfume from hangehange (*Geniostoma ligustrifolium*) can be smelt during the day. Most of the early willows have flowered, with golden willow (*Salix alba* 'Vitellina') the next to flower.

Everything in the bush is budding up and about to flower. The sources that cause swarming will soon be flowering, primarily cabbage tree (*Cordyline australis*) and hawthorn (*Crataegus oxyacantha*) because they produce a lot of nectar and pollen.

All of these early spring sources have boosted the hives, which are developing well. Bees can now be seen fanning at the entrance, indicating that nectar is coming in. It doesn't take very long for bees to fill the spare combs with nectar before they start storing it in the brood area, leading to congestion and then swarming.

Relieving hive congestion

Most beekeepers will have reversed their brood supers and added a honey super to keep the brood at the bottom of the hive and eliminate congestion. Those who use an excluder to confine the queen to the bottom super would have started bringing up frames of emerging brood above the excluder to give the queen more laying area.

There are several methods of removing congestion in a hive. **Before undertaking any of these methods, check the brood frames in each hive for AFB:**

- add more supers with drawn frames immediately above the brood nest
- swap the position of a weak hive with a strong hive. The field bees coming home will boost the weak hive's population and reduce the field population in the strong hive
- find the queen, keep her safe and shake the nurse bees off one or two brood frames into the entrance of the weak hive. The field bees will return to their hive and the nurse bees will walk in unopposed, thus boosting the population
- roofs on beehives in Australia fit directly on top (flush), with the top super leaving a space in the roof cavity. Spare bees will cluster in the cavity mostly drawing out new comb. Beekeepers there simply swap the roofs so these bees are transferred to a weak hive.

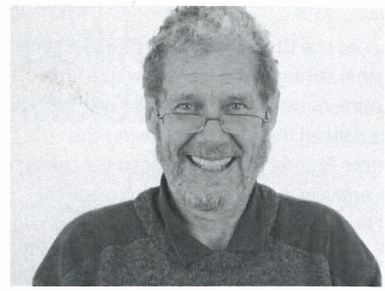
Mating queens, capturing swarms and making splits

Most commercial beekeepers have been splitting hives and adding 10-day-old protected queen cells to the queenless half. This is something they have planned well in advance. To mate queens, beekeepers need 40-day-old drones and 20°C temperatures during the day for the new queens to fly to the drone-congregating area to mate, hopefully with more than 20 mature drones.

> "the bees produced now are the ones that will bring in your honey crop."

This quick development in the hive often catches out those with one or two hives, and suddenly there's a swarm hanging off the top branch in a nearby tree. To get an understanding of the dynamics of a swarm, look on YouTube at Tom Seeley's "swarm intelligence".

What often happens is that as soon as you touch a swarm hanging on a branch, it



immediately takes off and is lost. Therefore, the first thing you do is gently spray it with cold water, whether from a garden hose or a spray bottle to cool the surface bees. This makes the swarm a little easier to handle.

I generally carry a fold-up cat carrier in the back of the cab for just such an occasion. Unzip it and work the swarm into the wide-open top, then give the branch a hard bump to dislodge the swarm into the bag. An alternative carrier can be a cardboard wine or beer box.

If the bees don't all go in on the first attempt, let what's left form into a cluster again and repeat so 99% are in the bag. If you're using a box, put the flaps down and fold them under and over for form a roof, leaving one flap slightly ajar so the remaining bees move in through the hole. Then hang the bag/box or put it under a tree in a cool, shaded place until the end of the day.

Now you have to attend to the hive the swarm came from. Here are some options:

- remove all the queen cells and put the swarm back on the old hive; however, it will often swarm again.
- cut out or squash all but two queen cells and leave the hive alone. Often the bees will swarm again if the cells do not emerge at the same time or if you miss a developing queen cell.
- I prefer to split the hives into two, three or four five-frame nucs (depending on the size of the hive) with a queen cell in each so that at least a few of the queens mate successfully and start laying. Those nucs that fail to raise a new queen are united with a nuc that has been successful.

When selecting queen cells, look for the longest queen cells that have a slightly dark tip at the bottom of the cell: these are the queen cells that are about to emerge. The →

bees have removed the wax and only the silk cocoon is showing. Remove all the other queen cells as they can initiate after-swarms.

You can use the capped cells to make splits in other strong hives. Gently wrap a little aluminium oven foil around the cell, keeping it upright all the time, but leaving the bottom four millimetres clear so the queen can emerge. An alternative is to place the cell in an old hair curler. Bees will tear down a foreign queen cell by going in through the side. The foil or hair curler prevents that and allows the queen to emerge.

Queen cells are susceptible to damage on the ninth day when the queen wing buds are touching the inside of the cell. A drop or bang will damage the wing buds so they won't develop fully.

To make a split in a queenright hive, divide the hive vertically so each half has equal proportions of brood and honey. Set one half up in the bottom super (with brood in the middle) and place the other half in the second super, after shaking all the bees off the frames from the second super into the first super.

Place a queen excluder between the two supers and leave for two to three hours depending upon temperature (it's quicker when it's warmer). During this time the nurse bees will have come up and covered the brood frames in the upper super. You now have a hive with the old queen in the bottom super and a queenless super on top, full of bees.

Separate the two halves, and press a protected queen cell into the centre of a frame of brood in the top queenless super (make a little gap for it by cutting out a few capped cells). Then remove the queen excluder and replace it with a split board, with the entrance facing away from the main hive entrance (a split board is a crown board with an small entrance on one end). Replace the roof and you have made a split.

Some commercial beekeepers will remove the bottom super entirely and move it to a different apiary or a different location in the same yard. The field bees return to the old hive position boosting the population of the top split.

Back to the swarm. Experience and size will tell the beekeeper if it's a prime swarm or a cast or second swarm. If you can't tell, it's a good idea to include a frame of open brood in the middle of the prepared hive to use the bee's instinct to look after brood, rather then swarm off again following a virgin queen. (This technique works most of the time but not always.)

Adding a frame of open brood also gives the swarm a head start towards establishing a new hive. I also include three or four foundation frames interspersed with frames of drawn comb so that bees with wax glands in full production can draw out the foundation frames.

In the late afternoon, place the prepared hive in its permanent location and take the swarm container to it. Select a frame of open brood from another hive and shake off all the bees. (You can include a frame or two of honey if the weather is about to change.)

Place the brood comb in the centre of the super. Remove three outside frames from the super and pour half the bees into the gap created, then gently put the frames back in. The frames will go down on their own as the bees spread out into the box. Put on the crown board and roof, then tip the rest of the bees out on to the entrance so they can walk in. I generally place a small sheet of coreflute in front of the entrance so the bees can walk straight into the entrance. You now have a new hive.

The swarm can be used as an increase or after the new queen in the original hive is laying, remove the old queen from the swarm hive and unite the bees back onto the original hive by using two sheets of newsprint between the boxes.

Remember that strong hives have the potential to swarm right up until the main honey flow starts. Continue to do quick inspections for queen cells every seven to 10 days by lifting the top brood super back and looking along the bottom bars for developing queen cells. Once you see an egg or a larva in the queen cells, split the hive or reduce the hive's congestion in some way.

Check hives for food stores

November in our countryside is a time of dearth as the weather is often inclement due to equinoctial winds. Ground sources such as dandelion have finished and willows have finished, so there's very little pollen and nectar coming in. The bees can quickly use any stored nectar and pollen in brood rearing and if we have a period of wet weather, the hives can rapidly run out of stores. If the bees don't get any nourishment promptly, they will cannibalise the young brood in order to survive.

Hives generally need feeding during this dearth period to keep brood production going, as the main flow is about 30 days away and the bees produced now are the ones that will bring in your honey crop. A break in brood rearing due to starvation means fewer bees to bring in the crop.

As I've stated in earlier columns, a hive with two supers full of bees is a good production unit. However, a single super with seven frames of brood and bees filling the whole super will also be a reasonable production unit by December, and won't have a tendency to swarm as long as you give it enough drawn frames in the honey supers.

New beekeepers: continue to feed the hive using a solution of two parts sugar to one part water to keep the bees drawing out frames and storing the sugar water. Ideally we want the bees to have drawn out two supers of frames.

The same advice goes for those with top-bar hives. It's very important to get frames drawn out so the bees can fill them all with nectar before winter. Most hives that died during the last winter will have died from starvation, through reinvasion by varroa mites or simply because varroa treatments were put in too late. It was a warm winter and bees were active in my region all the way through. Those that didn't put in extra treatments in June and July will have lost hives.

Rats and mice

The warm winter has also meant that a lot of our pests have had an easy time. Rats have breeding up and are now chewing away at my hives. It only takes them a few nights to eat right through a super to get to the honey supplies.

Mice are also a problem. I accounted for 11 mice in one of my dead-out hives—this hive was the most active in winter, robbing honey and shortly afterwards, it was dead due to mites. Then the mice moved in through the top feeder and were onto their second generation when I discovered the mess. They had eaten nearly all the dead capped brood, so it was hard to determine if any disease was involved.

These rats started by chewing through the narrow ventilation opening in the split board on top of the super.

After dispatching all but one that got away, I put a super with brood and bees on top and will monitor what happen in the next few months. I believe it should be all right as I hadn't found any other disease in that apiary.

Aluminium foil stops rats from getting in: in this case a Bayvarol packet. But if you bite into it, it hurts your teeth (oh, I can feel it now!).

The method I used to dispatch the mice was to drive them down into the bottom two supers and block the entrance. I gradually removed the frames, then sliced and jabbed them with the hive tool as I removed the frames.

These mice got in through the feeder but only one got away. Photos: Frank Lindsay.

Another bad wasp season?

I also noticed that wasps were flying: they were workers, which means some nests have overwintered. This isn't a good sign, and we could be in for another plague year for wasps. Bait early with homemade jam in a wide-mouth plastic jar under a hive to get the wasps working the bait before adding an insecticide.

Recently there was an item on the breakfast news that a beekeeper in the central North Island lost 400 hives to wasps this autumn. It's devastating to put all the work in and get the hives going, only to lose them during the robbing season. Wasps collect nectar year round to support their nests and when flowering stops, they resort to raiding beehives. Some beekeepers have found that Carniolan bees are far better at defending their hives than our Italian-cross bees, which tend to give up under a determined attack.

> "...strong hives can swarm until the main honey flow starts."

I have found the odd queen wasp hibernating under the roof of some hives but forgot to check whether the wasps had mites underneath before I squashed them. I'm not very good at live and let live as far as wasps are concerned.

Things to do this month

Check feed and pollen (there should be pollen in the outside brood nest frames and a good band of pollen around the top of the frames. Check for AFB cells in frames of emerging brood. Raise queen cells. Super hives ahead of their needs.

Requeen any failing hives for spotty/patchy brood. Check every seven to 10 days for queen cell development. Cull out old frames and any with broken lugs. Fit foundation into comb honey frames.

Check that your spring varroa treatments have worked with a sugar shake or alcohol wash and get the treatments out well before the honey flow starts. In the USA they are recommending a total treatment time of six weeks to prevent chemical build-up in the wax.

Report pollinator incidents

Worldwide, pollinators are struggling to survive. To monitor what's happening to our pollinators, the Organisation for Economic Cooperation and Development (OECD) has initiated a Pollinator Incidents Information System. The goal of this system is to record and share pollinator incidents with regulators throughout the OECD.

As an OECD member country, New Zealand has committed to introducing this system to monitor the situation here. The Environmental Protection Authority (EPA) will take responsibility for reporting pollinator incidents back to the OECD. It will enable us to compare what's happening in New Zealand with other countries, and to identify whether we need to take a different course of action to ensure our pollinators are protected.

To be able to meet this commitment, the EPA needs help from beekeepers and other people who observe pollinators to report any incident as quickly as possible. **To report an incident, fill out the form available on the EPA website: www.epa.govt.nz/bees**

[Editor's note: Please refer also to the article 'What is killing our bees?' by the NBA Technical Committee on page 40 of the October 2014 journal for further information.

If you are filling out an incident report for the EPA, please forward a copy of this report to the NBA for our information purposes by e-mailing secretary@nba.org.nz. This will enable the NBA Technical Committee to keep a register of bee deaths as well as the EPA.]

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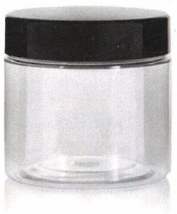

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340gm Round Jar
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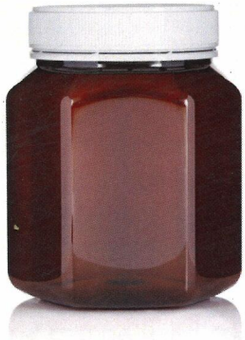
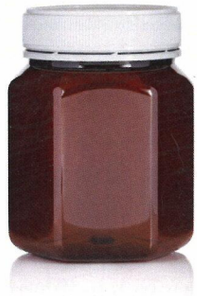


2kg Hex Jar



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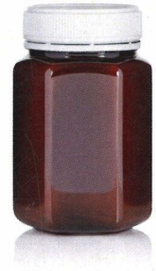

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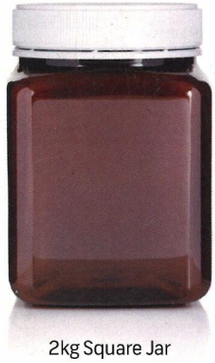
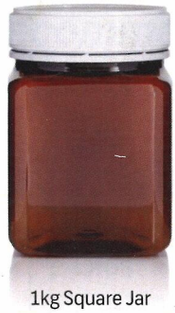


2kg Square Jar



1kg Square Jar

500gm Square Jar

250gm Square Jar

NEW ZEALAND'S MOST EXTENSIVE RANGE OF HONEY PACKAGING

Pharmapac's range of export quality packaging for honey has now expanded to contain square, hex & round jars. Sizes range from 250gm - 2kg.

Pharmapac is a New Zealand owned company, with more than 30 years in the business of designing, manufacturing and producing plastic packaging solutions for not only local, but an ever growing list of international clients.

All of our products are manufactured in our ISO9001-2008 accredited facility in Auckland, New Zealand.

No supply contracts are required.

Pharmapac follows well defined parameters of quality, conforming to various national and international standards. As these standards change, we work with our suppliers to continue to meet these requirements.

For more information or product samples please contact us at:

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sales@pharmapac.co.nz

100% NEW ZEALAND OWNED & OPERATED

TELARC REGISTERED ™
Quality
ISO 9001

* Our stock jar colours are amber & clear. Stock closure colours are white, blue, gold, green & black. For your own custom coloured closures, a minimum order of 5000 units will apply.

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