

February 2013, Volume 21 No. 1

# The NEW ZEALAND BeeKeeper

## Goals for 2013?



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Front cover: Dave Carleton holding up a swarm, 6 January 2013. Hives quickly filled and then swarmed on an intense flow. Photo: Frank Lindsay.

# Goals for 2013?

By Barry Foster, NBA President

Over the Christmas–New Year period I thought about the year ahead and imagined how 2013 could be made better than 2012.

I'm talking only about those things over which we have control and can influence.

So here is a wishlist for 2013, or you could call it four goals for 2013. These will entail buy-in from members first; hence the question mark after the title of this article.

**1. In 2013 the EPA and our industry finally recognises the necessity of independent testing of new and some existing pesticides through all stages of a bee's life** and does something about instilling it through adequate resourcing. Failure to do this is turning a blind eye to an increasing risk to our bees from lethal and sublethal effects of these new pesticides acting in combination with various pathogens.

**2. Pollination security is recognised by Government as a serious and immediate issue** to be addressed. Under this scenario, the Government, industry and various research providers, both here and offshore, would be collaborating in a greatly expanded research programme to tackle the multiple issues facing our pollinators. I outlined this in my report in the December 2012 journal entitled 'Increasing threats to our bees'. As of 2012 the issue of Pollination Security has been dropped from the agenda of the Local Government and Environment Select Committee. The NBA briefed them orally and in written form in May and June 2011. The NBA is lobbying to have this reinstated in order that a conclusion may be reached.

**3. MPI decides that the risk of importing foreign honey or bee products is too high,** particularly in the wake of the experience of the impact that Psa has had on the kiwifruit industry, for example. There is a parallel with bacterial/viral hitchhikers here and the risks they bring to any affected high-value industry. Heat-treating imported honey may, at some point, purportedly give MPI confidence of the elimination of exotic microbes within the imported honey. However, the

microbes could be in what is called a viable but nonculturable 'damaged' state and not eliminated (not detected by standard culture means) and potentially viable and able to cause infection. With this in mind, MPI would take full note of the often-used quote attributed to astronomer Carl Sagan, who said, "Absence of evidence is not evidence of absence".

**4. The NBA sets a goal to have at least 50% of its branch and national executive members to be aged 40 years or younger by 2018.** The industry recognises the necessity to nurture, train and encourage younger beekeepers into leadership roles and does something about it.

### "We have to begin to mentor the next generations of leaders of our industry..."

The average age of farmers is 58.<sup>1</sup> I'm sure that commercial beekeeping may be not too far behind this figure, based on a recent report by Rod Oram in the *Sunday Star Times*.<sup>2</sup> You can listen to a number of young New Zealanders mentioned in Rod Oram's article by visiting the link in footnote 2.

It invites difficulty to pick one or more from the list of speakers in this article, but I find Sam Johnson especially refreshing in talking about the value of contribution. As you may recall, Sam Johnson became a national figure after he helped mobilise a student volunteer army to help with the cleanup after the Christchurch earthquake.

In a TED talk on Christchurch<sup>3</sup>, Sam Johnson speaks of the value of contribution and the different ways that combined contributions can make a difference. Contribution should be fun, according to Sam, and it gives people a voice and a means of expressing their thoughts in contributing their experience and



skills. We need an intergenerational mix to bring new people on board to connect the generations and bring greater imagination and creativity to our industry. These are some of the thoughts from our young people.

I would add that contribution should not always stem from adversity or coercion; instead, it needs to be part of normal change that we seem to have stepped away from for now.

Right now we have too many members that, while they have plenty of skill and experience, have been in office far too long. I probably include myself in that group. We are seeing people doing second terms in the executive, which is not a good trend. If we don't begin to address this issue, then the NBA might not have too many more birthdays left beyond our 100th this year.

Leaving it up to the other fellow or always ducking personal contribution will no longer work. We have to begin to mentor the next generations of leaders of our industry and to help them to develop skills for governance and leadership. We are too small to continue to lose our skilled young people overseas or to the void of not belonging to anything, be it the NBA or any other industry organisation for that matter, because issues like those I've listed above will keep coming in the years ahead.

We need to look at those potential leaders in our branches and in our regions and help and encourage them with training. They will ultimately take over from us, and whether it is a managed change or a mess is up to us. Happy harvesting.

#### Footnotes

<sup>1</sup><http://www.stuff.co.nz/business/farming/6205514/Fears-neglect-on-the-rise-as-young-fail-to-work-the-land>

<sup>2</sup>See Rod Oram's report in the *Sunday Star Times* on [stuff.co.nz](http://www.stuff.co.nz), 23 December 2012

<sup>3</sup><http://www.stuff.co.nz/business/8108199/Rod-Oram-Young-gifted-and-Kiwi>



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# Lab programme protects manuka interests

By John Rawcliffe, UMF Honey Association

The UMF Honey Association (UMFHA) is very pleased to have completed the first phase of its international laboratory programme.

A worldwide network of testing laboratories is now in place, including some of the world's most respected testing facilities.

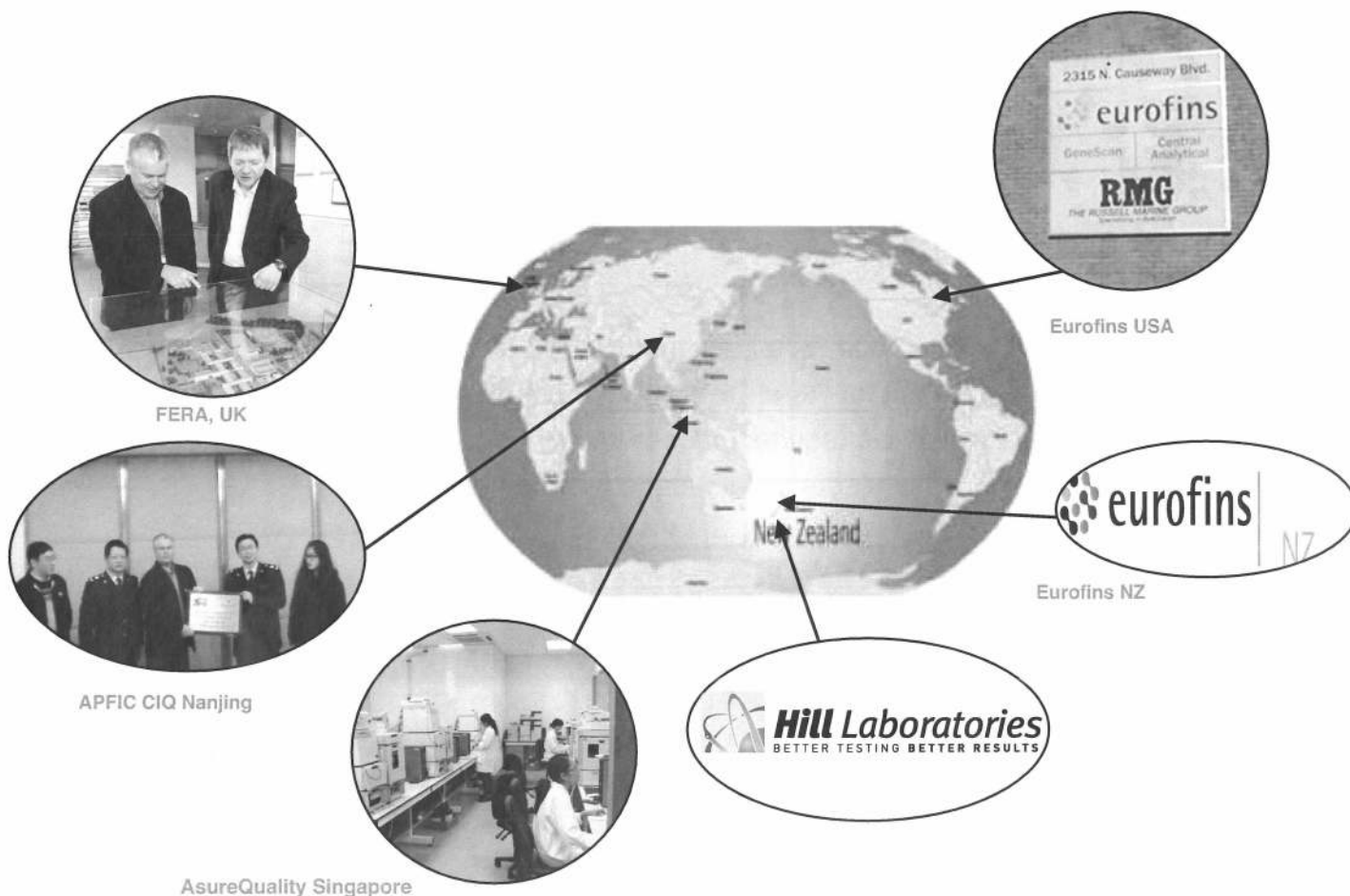
Administered byASUREQuality Limited, there is a programme in which each laboratory is provided samples to ensure they can

repeat and reproduce comparable results. Laboratories are all using both the well diffusion assay and the chemical marker test for methylglyoxal. They will also be involved in future testing using other potential markers such as Leptosin, and will be part of the detection of adulteration [e.g., the addition of dihydroxyacetone (DHA) or methylglyoxal] trying to mimic non-peroxide activity. This programme, over time, will ensure all the laboratories are testing faithfully to the phenol equivalent, irrespective of method, and this recognised testing will help to ensure the protection of this unique product in the territories in which it is sold.

The UMFHA is aware of a steadily growing concern from overseas testing agencies and associated regulators regarding the increasing amount of product sold as 'Active' where it, in fact, only possesses

peroxide activity. Samples tested in the New Zealand, Singapore and United Kingdom markets have demonstrated the instability of peroxide activity and that there is a significant volume of product that is misleading for the consumer and not true to label. In most cases the consumer believes they are buying non-peroxide activity.

The UMFHA is hopeful that the industry can move forward, take action on PA honey (table honey) being passed off as active and step aside from vested interests that can often arise in a rapidly growing and increasingly profitable primary industry such as this. Obviously the New Zealand industry needs to take action before the overseas market authorities do, which could significantly damage our international reputation for selling product not true to label.



# Royal approval for Rangitikei Honey

As part of the Royal Diamond Jubilee Tour to New Zealand, Prince Charles and Camilla, the Duchess of Cornwall, visited the Feilding Farmers' Market on 15 November 2012.

While wandering round the market they visited the stall of Rangitikei Honey, owned by Gavin Lambert. They were very interested in the honey stand; Camilla discussed types of honey with Gavin and the fact that they have hives on their farm at home, and she was very knowledgeable about the care of bees.

Prince Charles also spent some time at the stand, talking with Sue Walker and Todd Wheeler, inquiring how the current bee season was going and how varroa is affecting bees in New Zealand. It was a great honour that royalty spent time talking with us at Rangitikei Honey.

*[Editor's note: thanks to Rangitikei Honey for sharing this story and photos—well done! Lack of space prevented us from publishing it in the December 2012 journal.]*



Left to right: The stand at the Feilding Farmers' Market; Prince Charles (at left) visits the stand; Gavin Lambert, Sue Walker and Todd Wheeler.



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# Rewarewa honey for inflamed skin

By Dr Nichola Harcourt, PhD, Chief Scientist, Aldera Limited

Most of the rewarewa honey produced today is sold for use as a table honey, with very little marketed as a functional food or therapeutic product when compared with manuka honey.

New evidence shows that rewarewa honey may be a useful treatment for inflamed skin.

Based on the increasing acceptance of honey as a topical treatment for optimising wound healing and resolution of scarring, there are a number of honey-based products on the market that are marketed largely on their antibacterial (UMF® or MGO™) or antioxidant (TEAC) rating. Manuka honey fetches higher prices than other floral types due to its proven superior antibacterial properties, which is now known to be due to the presence of methylglyoxal (MGO™), a compound derived from manuka and kanuka flowers. Methylglyoxal is cytotoxic to bacteria but does not harm human cells, and therefore provides a targeted antibacterial action. While useful for infected wounds, methylglyoxal plays no role in the resolution of inflammation in the absence of infection. It has long been recognised that other floral honeys may be as effective, or superior to, manuka honey for alleviating inflammatory conditions.

With respect to scar formation in healing skin tissue, excessive inflammation is likely to contribute to an undesirable outcome. In addition to the common symptoms of pain, redness and swelling, highly inflamed wounds may develop raised and unsightly scars. One of the principal causes of the raised or fibrotic scar is inadequate levels of a protein called plasmin, which is required for the healing process to proceed normally. The availability of plasmin at the healing site is tightly regulated by the modulatory proteins

in the plasminogen cascade. The fibrous matrix of the wound plug (fibrin), which forms early in the healing process to stop bleeding and initiate tissue repair, must be broken down to enable the next stage of repair to begin. If the breakdown of fibrin is delayed, chemical signalling by the cells at the wound site is extended beyond the normal timeframe, causing persistent inflammation.

A common reason for insufficient plasmin levels in the wound is when an inhibitory protein kicks in at the wrong time, stopping the production of plasmin. In the early phase of normal wound repair, plasminogen (an inactive precursor) is converted into the active enzyme plasmin. This conversion occurs when a protein called plasminogen activator (PA) binds to plasminogen and cleaves the precursor protein into the active enzyme. This tightly regulated system ensures that the protein-digesting enzyme plasmin (a protease) is only available when it is required (i.e., when fibrin is present). When the fibrin has been digested by plasmin, an inhibitory protein, plasminogen activator inhibitor-1 (PAI-1), binds to the activator protein (PA), and stops the conversion of plasminogen into plasmin so levels of the protease fall away. When the tightly regulated system fails, PAI-1 binds to PA too early, causing plasmin levels to fall away before all of the fibrin is broken down. Where fibrin is still present in the wound, the next stage of healing cannot proceed, and tissue repair will be stuck in the inflammatory phase.

It is well established that the high levels of free radicals produced by cells in the wound during excessive inflammation (also called oxidative stress), activate PAI-1 production.<sup>1</sup> This is controlled through switching on genes for the inhibitory protein, leading to the appearance of PAI-1 in the wound while fibrin is still present.<sup>1</sup> Ultimately the early presence of PAI-1 in the wound as a result of oxidative stress shuts down the supply of plasmin. It is not surprising, then, that the application of antioxidant treatments to the inflamed wound bed has been observed

to increase the availability of plasmin, by dampening down the oxidative stress that drives the production of PAI-1.

It would seem logical then that honeys with high antioxidant levels would increase plasmin availability in the wound bed. In a study conducted at Waikato University, it was discovered that a number of monofloral honeys from authenticated sources (including clover, honeydew, thyme, manuka, kanuka, and rewarewa), all increased plasmin levels in cell-models of inflammation.<sup>2</sup> Surprisingly, there was no direct relationship between the level of antioxidant in the honey as determined by TEAC assay (a measurement of the ability of compounds in each sample to remove free radicals) and plasmin availability in cell models of inflammation. Rewarewa honey had the most potent effect of any of the floral honey types on preventing the inhibitory protein PAI-1 from being produced in the inflammatory models.

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**“...there is potential to create a new market for rewarewa honey...”**

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Rewarewa's superior performance as a regulator of the plasminogen cascade is consistent with other observations indicating that rewarewa honey may have better anti-inflammatory activity than manuka honey when applied to inflamed animal skin.<sup>3</sup>

This proof of rewarewa honey's capacity to resolve skin inflammation and regulate the plasminogen cascade in an inflammatory cell model, suggests there is potential to create a new market for rewarewa honey as a topical treatment for inflammatory skin conditions. It is likely to be particularly effective in modulating excessive scarring during wound healing. Returns from the sale of rewarewa honey are modest as it is generally regarded as a low-value food with few health benefits. Based on the marketing success that saw manuka honey transformed from a table spread to a functional food and high value wound treatment, there appears to be real



potential to lift the value of rewarewa honey and generate new revenues from a range of valuable new nutritional and medical markets.

## References

<sup>1</sup>Nagamine, Y. (2008). Transcriptional regulation of the plasminogen activator inhibitor type 1—with an emphasis on negative regulation. *Thromb Haemost.* 100(6): 1007–1013.

<sup>2</sup>Harcourt, N. R. (2012, Jan 21). Honey increases the activity of plasmin in activated macrophage cell culture models. *Innate Immun.* [Epub ahead of print]

<sup>3</sup>Leong, A. G., Herst, P. M., & Harper, J. L. (2011, Oct 6). Indigenous New Zealand honeys exhibit multiple antiinflammatory activities. *Innate Immun.* [Epub ahead of print]



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## NBA MEMBER PROFILE

# Interview with Brian Lancaster

Brian Lancaster is the president of the Canterbury Branch of the NBA.

The Secretariat interviewed him about his role and experience in the industry.



***How long have you been a beekeeper?***

Commercially, for 18 years.

***How did you get into beekeeping?***

By being a hobbyist.

***What do you enjoy about beekeeping?***

Being my own boss; working outside.

***Tell me about your current business.***

We are in a transition phase away from organics due to varroa. We do clover and honeydew honey as well as some pollination, which is increasing each year.

***What made you decide to become Canterbury Branch president?***

It was my turn.

***Tell me a bit about your priorities as branch president.***

This year it will be conference, and continuing to ensure that New Zealand does not go down the line of honey importation due to the increased risk of disease. I believe that another major bee disease in New Zealand would put an end to commercial pastoral beekeeping.

***What do you think your branch does well?***

We keep our branch members well informed thanks to our great secretary.

***What do you think the Canterbury Branch could improve on?***

We should probably hold more field days but being a small group, it falls to the same few to organise each time.

***What do you believe to be positive about the beekeeping industry?***

We have the ability to rally around a major issue and be a united voice.

***What do you believe to be negative about the beekeeping industry?***

In reference to the comment above, we waste a lot of energy and resources over trivial matters.

***What would you like to see improved in the beekeeping industry?***

Profitability.

***What do you enjoy doing in your spare time/what are your hobbies?***

What spare time?



## Did you know?

IT IS BELIEVED THAT HONEY HISTORY DATED AS FAR BACK AS 10 TO 20 MILLION YEARS AGO AND BEEKEEPING TO PRODUCE HONEY DATES BACK TO AT LEAST 700 BC.

Source: Quiz developed by 9-year-old James Ecroyd for his classmates, 2012.



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# Welcome to 100 years of the NBA

By Apiarius Antiquary

This year the National Beekeepers' Association is celebrating its 100 years of activities.

As part of our celebrations we will include in our journal some of our history, as well as topical issues of the times.

The Association has copies of all journals produced, from the first publication in July 1914 to the present day. In reflecting on the history of the association, one must also reflect how times have changed with communication and travel. The older journals would have taken considerable effort to produce—the gathering of content as well as setting the type—and the production runs are certainly a lot easier nowadays with computers doing a magnificent job.

The first issue of *The New Zealand Beekeepers' Journal* was produced in July 1914. The introduction states:

*In this our initial number we introduce ourselves to you, because we belong to you. Our object is to advance your interests and to further your prosperity. We ask you to give us your hearty support, and we shall do our utmost to merit the confidence and goodwill which has been promised in generous measure to this venture.*

*At the Annual Meeting of the National Beekeepers' Association, held in Wellington last month, it was unanimously resolved to undertake the publication of a monthly magazine devoted entirely to the interests of the beekeeping industry.*

In some ways the President at the time (Mr James Allan, Wyndham) summed up the value of our journal when we note from the President's report:

*Our greatest difficulty in attaining that unity which is always strength is the way in which we are scattered all over the country, often in very isolated situations, and without any means of getting in touch with each other. This difficulty should now be overcome, and our journal prove a bond of union amongst the beekeepers of the Dominion.*

Reported in the journal was that Miss Shepherd (Christchurch) advised that she had landed from Roots (USA) a third select breeder and an advertisement states that she offered queens for sale at 10 shillings (\$1) each. W. Dawson was advertising 4 frame colonies for £2, while a 'recommendation' suggested that, "Honey should not

be sold wholesale at prices less than from 4 to 4 ½ pence per lb."

The January 1915 journal listed a "Great Achievement" being a "contract to supply 100 tons of honey per year for 3 years" by the New Zealand Honey Producers Association to agents in Britain. It would appear that the NBA had been active in setting up a trading

'cooperative' to assist in the marketing of New Zealand honey, and the report stated:

*As there is every probability that the Shares will be over-applied for, it has been decided that preference will be given to producers who are members of the NBA.*

*It is felt that the splendid work of the Association deserves some substantial →*

## National Beekeepers' Association of New Zealand.

The object of the Association is the Improvement of the Beekeeping Industry and furthering the interests and the prosperity of the Beekeepers throughout the Dominion.

Membership is extended to any Beekeeper who is in accord with the aims and objects of the Association, on payment of a small fee.

Read the Report of Conference, and see what the first year's work has done for the Beekeeper. We shall be glad to have you as a member.

### DISTRICT ASSOCIATIONS AFFILIATED.

Waikato Beekeepers' Association. Hon. Sec., W. Hooper Teed, Waihou, Thames Valley.  
Taranaki Beekeepers' Association. Hon. Sec., H. W. Warcup, Hawera.  
Canterbury Beekeepers' Association. Hon. Sec., Miss Mackay, Sockburn.  
Pahiatua Beekeepers' Association. Hon. Sec., G. Bentley, Pahiatua.  
Southland Beekeepers' Association. Hon. Sec., R. Gibb, West Plains.

### EXECUTIVE OF THE NATIONAL BEEKEEPERS' ASSOCIATION OF NEW ZEALAND.

President: Mr. Jas. Allan, "Oakleigh," Wyndham.

Vice-Presidents: Messrs. J. S. Cotterell, Manawaru, Te Aroha; H. W. Gilling, Matapu, Taranaki; S. Hutchinson, Hamilton East; C. A. Jacobsen, Little River; A. Ireland, 24 Andover Street, Merivale, Christchurch.

General Secretary-Treasurer: Mr. R. W. Brickell, P.O. Box 572, Dunedin.

Applications for membership should be made to the Secretaries of the District Associations, or to the General Secretary.

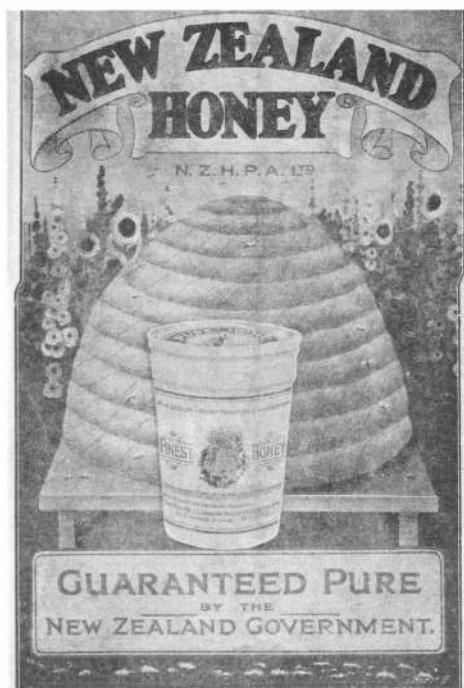
*This is the inside front cover of the first issue of The N.Z. Beekeepers' Journal, July 1914.*

recognition, and as the engineering of the whole project from initiative to completion was largely carried out by the Executive of the Association, it is only fair that that body should reap some little indirect advantage.

To belong to an Association that is live enough to be able to do such effective work on behalf of its members is "good business." As membership will give priority in the allotment of shares, those who have not yet affiliated will probably accept this fact as a suggestion that the time is opportune for them to enrol.

During the First World War years there was an appeal for honey to be gifted to either the soldiers or families in Britain:

*Honey for Troops at the Front – The Hon Colonel Rhodes has written his manager suggesting that a scheme might be formulated and donations of honey sent to our boys at the front. In order to give the scheme a start he has sent a donation of £100 for the purpose of purchasing honey. It is suggested that 1lb tins are the most suitable and convenient for transport, as the*



This illustration shows one of the many striking advertisements which are appearing in the English daily papers in conjunction with the window displays of New Zealand honey.

This caption appeared on page 321 of The N.Z. Beekeepers' Journal, Jan. 14 1916: This illustration shows one of the many striking advertisements which are appearing in the English daily papers in conjunction with the window displays of New Zealand honey.

*honey has to travel by mules. I would like to see all our beekeepers, large and small, come forward with gifts of honey according to their means.* - T. W. Kirk, Director of the Horticulture Division.

Beekeeping of today has been influenced by the early pioneers of beekeeping. Isaac Hopkins has probably been the greatest influence on our beekeeping and it is interesting to note the content of his address to the 1916 conference. The subject was "Prohibiting the Importation of Hive Bees into New Zealand". It would appear that there had been importations of Italian queens during the early part of the century, and I would assume these queens would have been imported in nucleus hives in order that they survive a journey in a ship (no fast airmail systems operating).

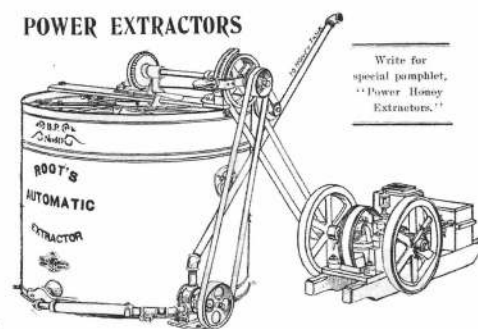
Isaac Hopkins was concerned that we did not place our nation in a position of importing bee diseases from other countries:

*I wish to bring clearly to your notice the great risk we are running at the present time of introducing one or other of the serious and so-called mysterious diseases (mysterious because of their sudden outbreak now and again without apparent cause) prevalent in other countries and which have so far defied all efforts to discover effective remedies.*

Mr Hopkins goes on to describe bee deaths in Britain, Australia and America and uses the terms 'Disappearing Trick', 'Isle of Wight Disease', and 'Microsporidiosis' for conditions which, at the time, causes were not apparent. I feel his concern is summed up in the following:

*Apparently we have had only one bee disease (Bacillus Larvae) to contend against and we are dealing with this successfully with so far that it now gives careful beekeepers little trouble or anxiety. Taking all these matters into consideration, and comparing our position with that of the industry in other countries where these strange diseases occur, and from where we are importing our queens that may be 'carriers' of these diseases, would it not be suicidal on our part to continue to run the risk we have done hitherto, and undo the grand result of nearly forty years work? In conclusion, I hope the Conference will give the matter its earnest consideration,*

## POWER EXTRACTORS



An extractor of the day available to purchase. This photo appeared on page 13 of the 'Alliance Beekeepers Supplies' 1914-1915 season catalogue.

*and take such steps as it deems necessary to eliminate all risks of introducing bee diseases from other countries, and urge the Department of Agriculture to act promptly.*

It would appear that the 'science' around 'bee deaths' is generally way behind what is actually happening; for example, it was reported in the 1921 journal that the cause of the Isle of Wight disease had been identified—17 years after the British beekeeping industry started to be decimated by the collapse of hives in 1904. Having Import Health Standards solely based on 'science' is only appropriate if the science is known and we are in no better position today when we consider the 'bee losses' reported around the world.

The journals in the period 1914-1923 are a reflection of the times; there are numerous 'letters to the editor' both with 'opinions' as well as requests for help on beekeeping issues. There are also reports of 'convictions' for failing to have 'moveable frame hives'. As I mentioned earlier about the setting up of the New Zealand Honey Producers Association, there was a benefit to the beekeepers for the orderly marketing of the honey crop; however, by 1921 the British 'agents' went into voluntary liquidation. Naturally this was a concern for beekeepers and this subject will be commented on in the next journal, covering the years 1923-1933.

## Source

Quotations drawn from *The New Zealand Beekeepers' Journal*, published between July 1914-1923.

# Siting the apiary

By John Burnet

When choosing a site for beehives and to ensure healthy bees, consider these seven criteria.

### Sunlight

Situate hives in full sun if possible, away from long shadows of buildings and trees, especially in winter. Bees are more active earlier if hive entrances face north or northeast to get early morning sun.

### Shelter

Provide protection from prevailing winds, cold draughts and wind turbulence that often develops in the lee of some walls or hedges. Avoid dripping branches. In Wellington, bees from hives in gullies or valleys running east/west cope with strong winds much better than bees from hives in gullies running north/south, as returning bees often have difficulty coping with the prevailing northwest wind.

### Dry ground

Lift hives well above wet places; avoid frost pockets and hollows where cold, damp air tends to stagnate. Modern bottom boards are either slatted or covered with mesh to prevent falling varroa mites from re-attaching to incoming bees. However, this means that moist air can permeate the hive from the ground. One of the best ways to prevent this is by placing your hives on a pallet, preferably a heavy-duty plastic pallet that will last much longer than an untreated wooden one.

Cover the pallet with a sheet of weatherproof sheeting such as a plastic flooring off-cut or similar. This will keep the hive drier, with less stress on the bees, and also keep long grass from growing through the pallet and around the sides of the hive.

The use of a pallet also stops long grass from blocking the hive entrance and reduces the need for a landing board. Bees are able to land on the vertical face of the bottom super

and easily walk into the entrance from above. In winter, field bees need to be able to land and crawl quickly inside the hive. A barrier of long grass or vegetation in front of the hive can impede returning bees, which could result in them becoming chilled and dying.

One pallet will also support two hives; two adjacent hives can protect each other from some wind and one hive can be used as a stand while working the other. Pallets are readily available free (often plastic ones too) from builders' supply companies, hardware and plumbers' merchants, etc.

### Flight path

Like aircraft, bees prefer a clear flight path of several metres for takeoff and landing with heavy loads. This flight path should be well away from people.

A long flight path may not be possible in an urban environment, so a two-metre screen about a metre in front of the hive may be necessary to force the bees to fly above head height. Trees planted in front of a hive will also help to hide the hives from nervous neighbours.

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**"...choose a hive site where you are able to have good year-round access..."**

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Flight paths should also be aimed away from targets such as washing lines, cars, building windows, etc., to reduce risk of complaints about bee droppings.

### Access

Full honey supers can weigh 30–40 kilos, so place hives in a position easily accessed with a barrow. Hives may look good on the roof of a shed or the top of a steep bank—and of course the bee flight-paths are well above head height—but working a hive in this location and harvesting supers would very likely be difficult and dangerous. Remember, unlike people, bees are not restricted by

fences and streams, so choose a hive site where you are able to have good year-round access with either a sack barrow or a wheelbarrow.

If there is a choice of hive sites, it is better to locate the hive at the bottom of a slope on which the bees are foraging. Bees need less energy to fly downhill with a heavy load than uphill and with savings in energy the bees consume less honey.

You should, if possible, approach your hive from the side or rear. If you stand in front of the hive you will get covered in bees as you are in their flight path. These bees will then often remain on your bee suit and get carried inadvertently back to the house, with possible adverse consequences for family and pets!

### Concealment

Hide hives from view where possible. Apart from the risk of vandalism, especially in areas accessible by the public, many people are afraid of bees and they are less likely to complain if they don't know there are hives nearby. Bees too can become defensive when people move around immediately in front of the hive. Often they are merely inquisitive and fly over to investigate. Unfortunately this may intimidate nervous people, which again could lead to complaints.

If your hive site is easily seen by the neighbours, talk it over with them in advance (some councils may require neighbour approval anyway). Encourage them to raise any issues or concerns with you directly. Complaints often can be solved simply by turning the hive to an angle where the flight path is changed. Keep the neighbours outside by giving them some honey every year.

### Permission

You should always check out your local council for bylaws covering beekeeping. Most enlightened councils base their bee bylaws on the 'nuisance principle' and allow residents to keep a couple of hives without a permit. They will intervene only if they

*Continued on page 15*



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Continued from page 13

receive a complaint about your bees (usually at least two complaints from different sources). Other councils require you to obtain a permit and may even charge you an annual fee.

Hive numbers should be limited to two or three in populated areas as the numbers of bees from several hives, particularly at the height of summer, can be viewed by many people as quite threatening or alarming. For this reason, some local councils may restrict or allow only a certain number of hives.

### Water

Bees need water and in a suburban area, wet washing on washing lines is a common source. Unfortunately this can result in little yellow waxy deposits being left behind (bee droppings), so it pays to provide a more suitable water source such as a bird bath or even a dripping tap on to a shallow container of sand or stones.



Two of the hives at the Wellington Beekeepers' Club, showing plastic pallets and floor matting. Photos courtesy of Pat Phipps.

## NBA TECHNICAL COMMITTEE

# Small successes can lead to major changes

By Don MacLeod, NBA Technical and Submissions Committee member

The NBA Technical and Submissions Committee made an in-person submission to the Environmental Protection Authority (EPA) with respect to APP201365.

During the hearing (held in Hamilton on 26 October) we were knocked back by the Hearing Committee and the EPA Evaluation and Review decision.

The EPA had made a decision prior to the hearing, deciding that the hearing was about the herbicides in the packet and not about the spray mixture in the tank, which would include surfactants and other adjuvants.

The EPA evaluation and review report on APP201365 in section 4.5.2 stated:

*Specific issues raised by the National Beekeepers' Association regarding the risk to bees posed by adjuvants which may be tank mixed with the aquatic herbicides are considered by the staff to be outside the scope of this reassessment. Adjuvants are not included in either the grounds or the application for reassessment itself.*

In the same Evaluation and Review report, the EPA made a decision to *prohibit* the use of nonyl phenol ethoxylate surfactants on or over waterways. They had clearly evaluated one chemical family of surfactants but not all surfactants.

You can see what makes this process frustrating and which interpretations the NBA is up against.

Fortunately the EPA Hearing Committee allowed us to speak at the hearing and the above decisions were the focus of my presentation. And I am pleased to report that the APP201365 EPA Hearing Committee made a very strong recommendation in their final decision document.

They specifically stated in Recommendation 7.1 of the decision document the following:

*It is recommended that the EPA examine the risks to the environment (including risks to aquatic organisms and bees) associated with adjuvants/surfactants that may be tank-mixed with pesticides and applied in a wide-dispersive manner into the environment, to determine whether the current controls on these substances are sufficient to manage the risks.*

This decision is now another success for the NBA Technical Committee to file for 2012. We will be following up this recommendation in 2013 to ensure that the EPA follows through with their decision.

### References

All submission documents and the application can be read on the EPA website <http://www.epa.govt.nz/search-databases/Pages/applications-details.aspx?appID=APP201365#>



# FROM THE COLONIES

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## Auckland Branch

After what seemed like an interminable period of extremely hot and humid weather, the season now appears to have settled down to some really beautiful summer weather. The pohutukawa flowered spectacularly throughout the region and should surely have produced a very satisfying flow for those with bees in coastal areas.

We are looking forward to the field day on 23 February at Elim Church Hall by the wharf, Thames, and one of the highlights will be Randy Oliver's visit. For those who were unable to attend the Conference in Auckland in 2011, the field day will be a great opportunity to learn from his wide experience. Randy's entertaining style will make for an interesting presentation.

All the signs are good for very worthwhile harvests, so long as we have a bit of rain now and then to keep the nectar flowing.

- Helen Sinnock

## Waikato Branch

It's HOT and it's fabulous! The weather these past three to four weeks has been fantastic with temperatures in the high 20s and just enough rain to keep everything growing. And growing it is! There is clover everywhere, honeysuckle, vinca major and heaps of blackberry. The bees have gone mad and are packing in the honey. Most of us are throwing boxes on like there is no tomorrow and I know of two who are having to make more boxes at night just to keep up. Long may it last!

The manuka also is flowering beautifully at Kawhia, Raglan and Waitomo and has been doing so now for two to three weeks. Which reminds me: to those of you moving hives to manuka, Steve Black has had a few calls from irate service station owners complaining about bees being left behind on their forecourts. Also, along the Forgotten Highway someone had just plonked their beehives on the side of the road! Please remember that not all of us love bees. Be responsible and be caring—block and/or cover your hives when transporting them, and place them where they are not going to be in the way of people, cars, bikers or stock.

Don't forget the field day at Thames on 23 February. A variety of topics will be covered

including resistant mites, pheromones, C4 sugars and CFUs in honey. The keynote speaker is Randy Oliver from America. Refer to the ad in this journal for more info and who to contact if you would like to hold a stall on this day. Don't miss this!!

And lastly, Happy New Year everyone! I think it is going to be a happy one!

- Barb Cahalane

## Poverty Bay Branch

After several poor honey seasons we finally have a boomer. November was very hot and dry but rain came in December and January when needed. The hills are still green for the second year in a row, which is very rare for the East Coast. This will keep the clover multifloral honeys flowing for a while yet.

Most beekeepers ran low on supers before Christmas. By the time you read this, harvesting will be in full swing, so let's hope they are all full.

## Trees for Bees project

This project, on a demonstration farm, is aimed at improving forage for bees. Plantings got off to a good start although a few were lost due to late frosts. The dry conditions in late spring and early summer have killed off a high percentage of the remaining plantings. This is a very dry, exposed face we are trying to establish. We may need to take a long-term approach and get some shade plants established first.

I hope all had a good well-deserved break over the summer and are into a good harvest by now.

- Paul Badger, Branch President

## Hawke's Bay Branch

As usual, while much of the country has suffered from too much rain, most of Hawke's Bay is very dry, with some areas under severe moisture stress. Early clover production has been very good, while bush honeys have been well below average.

Native solitary bee populations have been building up for several years and are now found in vast numbers through most of the bush areas. Many people believe this has had a disastrous effect on honey production.

On the bright side, at least we're not getting stuck all the time like we were in the spring.

- John Berry, Branch President

## Southern North Island Branch

Spring was a bumpy ride with rapid weather changes. There were huge differences in weather patterns around our area from Taranaki to the Wairarapa and Wellington.

Queen rearing/queen cells was made very difficult with the changes of weather. Either it was wet and cold and cells had to go out, or it turned wet and cold after the cells had been put into hives. We experienced subsequent problems of queens not making it back from a mating flight, or just bad mating and queens turning into drone layers. In spite of that, some beekeepers reported successful spring requeening.

Hives that had been treated properly for varroa and also fed well grew in strength. As I write this, the weather after Christmas has been great—fine and hot with a good honey flow. Clover is pouring in but in some areas the manuka has dried out, making it a short honey flow. Some of my hives have three full boxes of honey now and many in our area are putting more boxes on.

We all have our fingers crossed that it will be a good honey harvest to make up for the last two years.

- Neil Farrer, NBA Life Member

## Canterbury Branch

It is hard to believe that 2012 is done and dusted and we are into the business end of 2013. Well that's how my bookkeeping works anyway.

The last two months in Canterbury are just about opposite to last year. This year the start of December was cool and once Christmas was over it has been a traditional Canterbury summer of heat, sun and wind. It's still a bit too early to predict what kind of season we are going to have, but here's hoping. I'm still waiting to put the last of the pollination hives in as I write. Some crops were a week to 10 days early; others were late: who ever knows?

Now is your last chance to get those last few boxes to where it is going to make a



difference and then enjoy some time at the beach while the stunning weather lasts!

#### Conference update

Planning for the Conference and Seminars is under way—mark your 2013 calendar for Sunday, 16 June to celebrate 100 years of the NBA. Conference runs through to the AGM on Thursday 20 June. Check the website for accommodation choices – bee in early.

We have a register for the celebration of 100 years (to be held on Sunday afternoon, 16 June). If you would like to be informed of updates for this occasion, please register your interest with the Conference Secretary, Linda Bray, phone 308 4964; email [birdsnebes@xtra.co.nz](mailto:birdsnebes@xtra.co.nz)

- Brian Lancaster, Branch President

#### Southland Branch

As I write this a bridge on the Te Anau Highway is washed out and what started as a hot summer in December has deteriorated into a wet January; much like our spring but a few degrees warmer. The dismal spring weather resulted in poor queen matings and struggling hives, even though many Southern beekeepers are now feeding pollen supplement.

Varroa has now spread over much of Southland and had a detrimental impact on a number of beekeepers this spring. Some areas are still free of the pest but by autumn this will be reduced to isolated pockets. The last of the country's chemical-free hives will now be treated.

Still, we remain optimistic that the sun will yet shine this January and the white clover yield a bountiful crop. Those on December bush honey report patchy crops, but rata, which is beginning to flower, may compensate.

- John Stevenson, Branch Secretary

#### From the Chatham Islands

We are enjoying warm weather, mild to moderate wind and a few showers. Queens are naturally mating. The honey flow is on as clover is flowering all over the island. The increased presence of bees on the island is rewarding farmers with improved pastures and healthier stock.

On a beach-side reserve at the northern end of the island, 10 pohutukawa were planted many years ago and have become a prominent feature of our village. We arrived in this area two or three years ago with bees, and the trees are flourishing and making an awesome display of spectacular red flowers.

Our small school continues to actively support beekeeping. Every week we work the two school hives with the children. Recently Waioeka Gorge School (from the Gisborne area) visited the Chatham Islands and our students at Te Kura O Kaingaroa stepped up and guided their visitors to put on bee suits and look into a 'real' beehive. All the students had an exciting and stimulating experience.

The school has also started a horticulture programme by investing in a tunnel house, planting it out with vegetables and planting fruit trees around the grounds. Families are starting to plant for bees in their home gardens by also planting fruit trees and wildflowers. One family has two hives in their back yard.

We have a dream about 'bee corridors' emerging along the road verges and in

our village we mow the road verges to encourage clover to flower abundantly. We are looking to do more for the bees. One farmer nearby is setting aside some fence-line land to plant trees for bees in spring, as this is most difficult time for bees on this island.

We have a small informal pollen research project with Massey University. Dr Kat Holt has been to this island many times as a PhD student and is now giving back by working with the Kaingaroa students on a pollen study of the Chatham Island plants special to this region. We look forward to the results.

Lastly, we are successfully raising queens (80% strike rate) and looking forward to seeing the results of some queens we artificially inseminated recently. We supply queens free to our island beekeepers and they are enjoying a great honey flow. This is an important development for this island as mating queens naturally is difficult (weather). We invite you to contact us regarding our work to investigate whether our queens will suit your environment and operation. And come and visit us on the island.

- Mana Cracknell & Michele Andersen,  
email [Matahu@xtra.co.nz](mailto:Matahu@xtra.co.nz); ph 03 305 0618 

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# Scientist warns of pollination crisis

By Mark Peters, *Gisborne Herald*

Action needs to be taken now to avoid a pollination crisis in New Zealand, says Landcare Research scientist Linda Newstrom-Lloyd.

"Bees are threatened by a combination of stressors. One of them is the loss of flower resources. In many areas they don't have enough pollen. If they don't have enough pollen they get malnourished.

"No bee food means no bees. No bees means no pollination. No pollination, no crop yield."

Given more than 130 crops are dependent on bee pollination, New Zealand's capacity to produce food is at risk. Without production, we would have to import food and that could prove costly and difficult.

Aided by intern Jean Noel Galliot, Dr Newstrom-Lloyd is conducting a major research project at Eastwoodhill Arboretum in a bid to help avert that crisis. The aim of the project is to identify trees and shrubs which are attractive, easily accessible to bees, and have the highest quantity of protein in their pollen.

High protein means healthier bees and more bees which means agriculture benefits from better pollination services.

To start the project, Gisborne beekeeper Barry Foster set 24 hives at the edge of the arboretum. The two researchers walk around the arboretum while looking and listening for bees.

### Bee hum

Mr Galliot says if the bees are really interested in a particular tree or shrub, their hum can be heard from at least 50 metres away.

But if a tree is in shade, bees might not be as busy in its canopy as they would be when the tree is bathed in sunlight. If flowers such as clover are in the vicinity, bees might be distracted from a pollen-productive tree or shrub. Repeat visits are required at different times of day.

Once a bee population has been found at work, Dr Newstrom-Lloyd and Mr Galliot collect bees and take samples from the bees' pollen baskets.

Pollen baskets are small cavities on the bees' hind legs in which pollen is compacted.

One of two significant innovations Mr Galliot has devised for the project is an insect net on the end of a three-metre pole with which to collect bees. He has also devised a way to chart selected trees and shrubs from the arboretum's 3500 species and varieties on a scale map.

Red pins signify flowering trees, yellow pins indicate buds that will flower at a later date and blue pins give the location of bee-friendly trees whose flowering time is yet to be determined.

After exploring the arboretum, Mr Galliot keeps the locations of pollen-rich trees with bees in his head and this [information] is transferred later to the chart on the map to plan the next day's route.

Thanks to this system, the two researchers have identified 70 pollen-rich plants so far.

"There is pollen all over the place at Eastwoodhill," says Dr Newstrom-Lloyd.

"The problem is, it's not on the farms. We find a lot of trees that are not yet grown on farms. We need diversity on our farms which is why we came to Eastwoodhill. It is a phenomenal resource."

The ultimate aim of the project is to identify which of those pollen-rich plants are compatible with, or acceptable to, various regions around the country and to encourage farmers to grow them in plantations.

### Action now

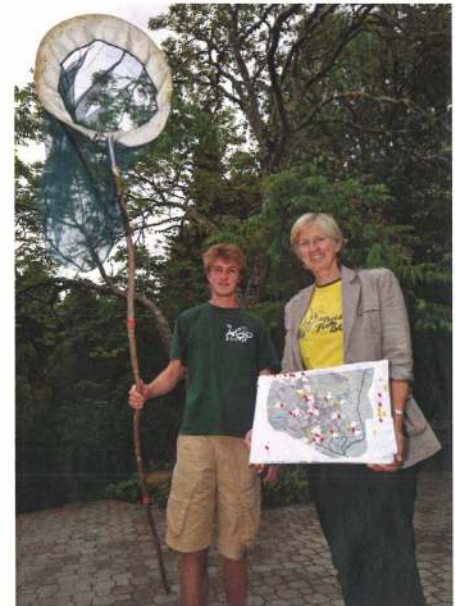
Two demonstration farms have already been established in Canterbury and one in Gisborne.

Beekeeper Paul Badger works in partnership with Gisborne farmer Peter Hair on a "trees for bees" project on a farm at Lake Repongaere.

The demonstration farms will be monitored for five years.

The science behind the project is strict, meticulous and careful, says Dr Newstrom-Lloyd.

"We have done this project with a lot of precision thanks to collaboration with GNS Science. We have vouchers for every step of the way."



*A-Crop-Alypse Now: Aided by intern Jean Noel Galliot (left), Landcare Research scientist Linda Newstrom-Lloyd is on a Ministry of Agriculture and Forestry funded mission to locate [identify] trees at Eastwoodhill Arboretum that are particularly attractive to bees. The long-term aim is to avert a pollination and crop production crisis. This is part of a major research project with Landcare Research and AsureQuality and is funded by the Sustainable Farming Fund. Picture by Paul Rickard.*

Vouchers include fresh pollen, pollen preserved in alcohol, pressed plant matter and macro photographs of the bee at work on the flowers. →

A particular flower might be high in pollen but the bee needs to be able to land onto the flower. Macro photographs—high resolution close-up pictures—can help prove this.

The colour of the pollen can help identify the pollen source. But because bees can visit one tree for pollen and another for a drink of nectar, pollen samples are checked against plant samples also collected by the researchers.


“We have to prove the pollen on the bees’ legs comes from that flower. A specialist can identify from the chemical structure of a microscopic sample where it has come from.”

Dr Newstrom-Lloyd says she started this programme because there is a global pollination crisis.

“I want to see New Zealand doesn’t suffer from that. Things are getting worse internationally and if we don’t do something, things will get worse in New Zealand.

“I have been studying this for five years. To avoid a pollination crisis, we need to take action.”

#### Source

Peters, M. (2012, November 20). Pollination crisis needs to be avoided says scientist. *Gisborne Herald*, p. 5. Reprinted with the kind permission of the *Gisborne Herald*. 

## Get snapping!

It’s time to start taking some photos to enter in the fifth annual Ecroyd/NBA photography competition, to be held as part of the NBA Conference, Ashburton, 16–20 June 2013.

Please refer to the notice on page 14 of the December 2012 journal for categories and contact information.



## Trees for Bees Conference, 26–27 April 2013

The Eastwoodhill Arboretum near Gisborne will be holding a conference on 26–27 April 2013. Dr Linda Newstrom Lloyd will be presenting the preliminary results of her research into trees and shrubs that can provide a source of high-quality pollen for bees. Given the great diversity of plants at the arboretum, she is identifying quite a number that have the potential to greatly increase the pollen supply during times of shortage.

Dr Newstrom-Lloyd will be supported by a panel of speakers from the bee industry, the Farm Forestry Association, the nursery sector and Landcare Research. As the profitability of much of our farmland is dependent on the health of our bees, both native and introduced, this will be an opportunity to find out how all sectors of the community can improve bee health.

For further information and registration, visit: <http://www.eastwoodhill.org.nz>

## EDUCATION

### Gorse and spraying

By Neil Furness

Gorse has been a pest for so many and large areas of it have been sprayed and destroyed. Yet my story has a different perspective.

I have two beehive sites and towards the end of winter I noticed that the hives on the one site were strong and on the other, weaker, where I lost approximately 25 percent of my bees.

What I noticed about my strong hive site was the yellow pollen on the landing boards. Bees laden with pollen were coming from fields with much gorse.

Both hive sites had been treated the same way for varroa. I thought it might be that the queens were better at the one site. I had a chat about my findings to a number of experienced beekeepers as well as to Mike Allsopp in South Africa, who was our guest

speaker at the 2006 NBA Conference in Hamilton. My conclusion is that the pollen from gorse has made my hives healthy and in a far better position to resist varroa.

I am reluctant to use imported pollen or food substitutes as these might cause more problems than solving them.

Another twist to this story is that another strong hive in a different location was flourishing on gorse from nearby fields. Within a short period this strong, AFB-free, varroa-treated hive, died. I noticed later that the gorse too was dying and fences around the area had HAZCHEM signs on display.

I have a sticker on the back of my car that reads: BEE SAFE SPRAY SAFE. I learnt the importance of this the hard way.

The eradication of gorse by spraying is having a ‘double negative’ effect on the health of our bees. Not only is a good pollen source being destroyed, but the spraying is killing bees as well.

The survival of our honey bees is at stake and they deserve better than this. 

## ABOUT THE APIARY

# Setting up for next season

By Frank Lindsay, NBA Life Member

As I write this in early January, the bees are filling up the hives at a ferocious pace, courtesy of a nice spell of warm weather, ample rain at night and profuse pohutukawa, rata and clover flows.

Even the odd bush source (*Melicytus ramiflorus*, better known as mahoe or whiteywood) is flowering, albeit a lot later than normal. Coastal manuka fizzled due to cool, windy weather during its Christmas flowering.

Five- and 10-frame nucs are completely full, except for a small section on a couple of frames where the queens are still laying. Six-high hives are full and some have induced swarming. Bees need a lot of comb space to store nectar before they reduce the water content down below 18%. It never ceases to amaze just how quickly the bees will fill up a super on a good flow. Generally I put on supers two at a time until the supers are all gone, then hope the bees will gradually 'honey down' the queen into the bottom super. Sometimes the bees have different instincts.

New beekeepers should be interspacing foundation with drawn frames to keep the bees building out the comb. Drawn-out combs are your most valuable asset. You need between three and five supers of drawn-out comb for each hive unless you continuously extract. In a poor year, bees may not look at building out new foundation but given fully drawn comb, they could produce a crop for you. In a good year, they could fill the lot.

Well, that was the message for January but now it's February, another very busy month.

What you do now sets up your hive(s) for the next season.

There are three very important things to do this month:

1. remove the honey crop, but leave enough for winter stores
2. requeen hives that have a queen older than 12 months
3. treat the hives for varroa.

### Removing the honey crop

Once the combs are more than 90% capped they can be removed for extraction. Taking honey while it's not capped, or during damp weather leads to fermentation.

How much to remove depends upon your area and the knowledge you build up over the years. I live in an area with early flows; hence I winter the hives stronger and full of honey so the bees build early to peak as the nectar flow starts. After the main flow other minor sources tend to be flowering. Although there's not enough to store, these sources provide enough to stimulate brood rearing. In some years, it can lead the bees to consume the majority of the honey stores. By the time autumn really arrives, these hives could be short of stores and may need sugar feeding to put on enough honey to get them through the winter. In most cases a hive will need a full-depth super of honey to winter over on. Anything more than this is yours for the taking.

The bee books tell you how to remove the crop using different methods. Some are quick, like blowing or using fume boards, and are more suited to rural areas where flying bees will not upset neighbours.

Hobbyist beekeepers in urban areas tend to use escape boards as they are less disruptive to the colony and neighbours. These go on in the evening. You apply a little smoke to start the bees moving downwards, then remove the honey supers first thing next morning before your neighbours have breakfast. Brush out the handful left in front of the hive; cover, extract and return in the evening.

For escape boards to work efficiently, there must be space in the supers below for the



bees that once occupied the honey super. If there's no space below, the bees won't go down. While the hives are still populous and nectar is coming in, provide this extra space by putting on a super under the bee escape. Fill it with frames if you have them.

There are other reasons why escape boards don't work:

- placed on upside down
- presence of brood in the frames (beekeepers who don't use queen excluders could find drone brood in the odd honey frame). The bees won't leave brood. Scrape down the cappings and give the bees 24 hours to clean away the mashed larvae
- there are different models that don't have a one-way valve. These work well if left on for only 24 hours. After 24 hours the bees will slowly start to find their way back into the super. Porter bee escapes have tiny springs that prevent the bees returning but they can become jammed with drones; hence the need for a couple of escapes in each board. The springs should be adjusted to a pencil width. Also clean away any propolis around the springs. They should only have a light tension, set at the route of the spring.

**"Now is the time of year that you set your hives up for the next season."**

*One of the most important things to do before taking off any honey is to fully inspect the brood frames for AFB. From personal experience, it's most disconcerting to find a few cells of AFB on a hive full of honey. Such a waste, but better that it be found now. Extracted supers from an AFB hive are a time bomb; i.e., every hive that receives these supers will come down with AFB within the next 18 months. →*

It doesn't take long to inadvertently spread the infection to a number of hives, making all the supers from those hives also suspect. Luckily most hobbyist beekeepers will not see this disease in their hive, but always be vigilant. A hive not building the same as the rest should always be investigated. Usually the cause is a dud queen or hives that have swarmed, but also keep disease in the back of your mind.

## Queen replacement

Now is the time of year that you set your hives up for the next season. Most commercial beekeepers replace their queens each year. Why? First, because a queen less than 12 months old is less likely to swarm. Second, new queens produce more bees, therefore hives also produce more honey than a second-year queen.

It's easier for the queen breeders to raise queens while there is a honey flow on. There are plenty of drones about and settled weather means better mating.

A lot of commercial beekeepers put 10-day-old protected queen cells into hives, forcing a superseding of the old queen. Not everything always goes to plan, so a number of nucs are also raised to cover those that fail to requeen.

The hobbyist's option is to use mated queens from the queen breeder. Dequeening and requeening a full-size hive with a mated queen is full of risks. Older bees recognise their queens and will not accept a new queen straight off.

The best method to requeen is to start with a nuc. This consists of two frames of emerging brood and two of pollen and honey, plus a shake of bees off another brood frame. Block the hive with grass and store in a cool shady place until evening. Remove the attendants and place the queen cage in the hive, with the screen side exposed to the bees can feed the queen. Place the hive in the apiary and allow the bees to release themselves by eating through the grass. If left on the same site, the older field bees will return to the original hive, making acceptance easier.

Three days later, check the brood area in the nuc and remove any queen cells the bees may have started. Release the tab protecting

the candy end of the cage so the queen can get out of the cage. Leave the nuc alone for 10 days, then check for eggs.

If all goes well you will see eggs, meaning the queen has been accepted. Leave for another four weeks for the queen to settle in, then proceed to find and kill the queen from the original hive. Unite the nuc on top with two sheets of newsprint to allow a slow merging of the nuc bees with the main colony.

First-timers can provide extra insurance: instead of killing the old queen, make another nucleus hive. When you find the old queen, simply put her and the frame she is on into another nuc and make up the nucs as above. This way you don't have to worry about acceptance.

If all goes well with the new queen, the old queen can be killed and the bees reunited, or she can simply be left in the nuc to build it up ready for winter. Between now and winter, the bees in the nuc might produce a queen cell and supersede her, giving you both a hive and a nuc with a new queen.

## Treat for varroa

The third major thing that should be done this month is to treat your hive for varroa.

Brood rearing is on the way down while varroa numbers are now climbing. It's important to keep varroa numbers as low as possible so that viruses are not transmitted to the brood, as these can affect the hive long after the mites have been controlled. You also need to produce a couple of generations of bees, produced in a varroa-free environment to take you through the winter. This last factor is not as important in coastal New Zealand if you have Italian bees, as hives close to the coast produce a small amount of brood year round, giving you replacement bees. Those using Carniolans will find that brood rearing ceases early, so having two generations of mite-free bees is more important.

Commercial beekeepers try and requeen and treat for varroa at the same time. The time period between the queen emerging to the time she is mated and laying creates a break in brood rearing. When there is no young brood coming on, all the mites have to stay on the bees, making them easier to control in one treatment.


If you are not using one of the three strip formulations, you need to put your treatments in early, as this gives you time to repeat the treatment if for any reason it fails. And yes, using 'organic acids' is a learning experience. Such things as the daytime temperature, the overall hive population, brood area and the number of supers on the hive can all have a bearing on just how much to apply.

It's also important to coordinate the treatment of all hives around you; i.e., so that they are all treated at the same time. A few hives left untreated can undo all your good work.

## Things to do this month

Clean and sanitise the extracting plant. Check that all gates and taps are closed (honey is very silent when it's flowing on the floor). Check for AFB before removing any honey supers.

Extract honey and super again with extracted frames. Requeen with cells or make up nucs from non-producing hives. Check that the hives have sufficient stores (a super of honey). Remove comb honey early to prevent travel staining: bees have dirty feet.

Close down entrances and realign the honey supers (if you have created a top entrance) by skewing a honey super as soon as the flow finishes. This assists the bees to defend their hives from robber bees and wasps. Treat and monitor mite fall after 10 days or check the number of mites in drone brood. Coordinate treatment times with all beekeepers in the area. 



Frank Lindsay checks the pollination hive in his son's garden, supervised by grandson Richard Lindsay and his playmate Michael Duncan. Photo: Andrew Lindsay.

## China market access update

By Dr Karyne Rogers, Senior Scientist—Environmental isotopes, GNS Science

Of all the international export markets for honey, China is one of the most difficult to satisfy requirements for testing.

In December 2012, Dr Karyne Rogers, a scientist from GNS Science, visited the Animal, Plant and Food Inspection Center (APFIC), Jiangsu Entry-Exit, China Inspection and Quarantine (CIQ) at Nanjing for two weeks. Her visit took place as part of her ongoing collaborative research with Chinese government honey scientists on C4 sugar testing.

Karyne took the opportunity to ask about current tests that the honey testing laboratory is focusing on for honey imports.

APFIC is the key government testing laboratory for honey products in China, testing all products which enter and exit China for export. The CIQ branch at Nanjing has around 2,000 staff for food product testing, with the honey testing facility consisting of around 50 staff. APFIC has set up a series of laboratories to administer a variety of tests, and during 2012, at least 11 different tests were being undertaken at on honey.

According to the laboratory staff, tests routinely conducted on imported honey include:

- % fructose, glucose and sucrose—where fructose and glucose should be more than 60g/100g (60%), and sucrose less than 5g/100g (5%)
- AOAC 998.12 method for C4 sugars—a measure of cane sugar addition which should be less than 7%
- AOAC 979.22 method for Thin Layer Chromatography—measures the presence of oligosaccharides
- verification of UMF® (a branded quality mark rating) or non-peroxide activity (NPA) claims on labels, which relates NPA to a key active ingredient methylglyoxal, and is currently being measured using

- the well assay/methylglyoxal correlation curve as published in the corrigendum by Waikato University (Adams et al., 2009)
- colony forming units (CFU) count—an estimate of bacterial or fungal numbers in the honey
- moisture—should be less than 20%

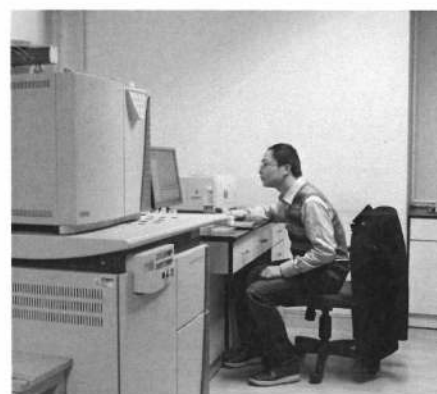
APFIC has the capability to conduct many other honey tests and will do so from time to time if they have any concerns. These include pesticide and residue testing, antibiotics, hydroxymethylfurfural (HMF), DHA/methylglyoxal verification and C3 sugars (such as beet or rice).

Although the list of honey tests outlined above are those that APFIC is currently testing, you should always check the relevant Overseas Market Access Requirements (OMAR) on the MPI website <http://www.foodsafety.govt.nz> to confirm which export requirements you should be meeting before product leaves New Zealand. If in doubt, speak to your local MPI Verification Services officer.

Karyne has been working in collaboration with the Chinese laboratory staff on the issues of false positive C4 sugar testing (AOAC 998.12 method), which came under increased scrutiny last year with a large multi-million dollar shipment to China that failed this test in 2011. Since that time, GNS has set up a Memorandum of Understanding (MOU) with APFIC for a collaborative honey research program. Karyne has been working with the scientists from APFIC who are interested in the C4 sugar issues that have been affecting New Zealand exports. Using the latest isotope technology, they have been working



Preparation of samples for testing.



Scientist running honey samples for sugar testing.

on New Zealand honeys that have both genuine and false positive fails to investigate new pass/fail criteria for the current AOAC 998.12 method and alternative confirmation methods.

Although the scientists now agree that false positive results occur in New Zealand honey, the APFIC follows Codex, so may not change their testing protocols until Codex changes. During Karyne's visit, she worked with the Chinese scientists to finalise evidence showing that the sugars found in false positive honeys are from nectar, and not derived from C4 sugar syrups.

Karyne has also been concerned about occasional false positive results for oligosaccharides (AOAC 979.22) testing, currently conducted by Cawthron Institute. The presence of oligosaccharides is considered to be indicative of High Fructose Corn Syrups (HFCS), which has been occasionally fraudulently added to honeys in some overseas markets to improve harvest yield. Comparisons between the methods performed in both laboratories found some small discrepancies (most likely lost in translation), which have now been corrected, and should improve the reproducibility and reliability of this test. There is growing evidence, however, showing that some honeys are prone to false positive testing for AOAC 979.22, especially for manuka and honeydew, which have natural oligosaccharides present.

Although the false positive C4 sugar issue is nearing a resolution, one of the biggest remaining concerns the Chinese honey testing facility has with New Zealand honey imports is the range of different activity →



APFIC, China Inspection and Quarantine building, Nanjing, China.

ratings on labels. Occasionally labels are ambiguous or poorly explained, causing confusion for the testing laboratory and the consumer to understand the level and type of activity within the honey. This will be an area that the Chinese scientists will be examining more closely in the coming year, and one that the New Zealand honey industry should be addressing to ensure coherency and consistency.

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The Lingshan Buddha, at Wuxi, measures 88 metres high and is the largest Buddha in the southern hemisphere. Photos: Dr Karyne Rogers.

## Stay hydrated!

By Frank Lindsay, NBA Life Member

Commercial beekeeping is hot work. You are doing heavy work in heavy clothing. It's imperative that you take in a litre of water every hour.

Sugary drinks will not do the trick as they restrict the amount of water going into your bloodstream. A first sign of dehydration is thirst and a dry mouth, followed by a

**"...water intake is essential."**

headache. At this stage it gets dangerous, particularly if you are doing heavy work. Drugs will chemically thin your blood

to relieve the headache but they do not alleviate the problem of dehydration.

Another symptom of dehydration is getting muscle cramps at night. When I was in Australia several years ago, I was walking around with a camera. I didn't realise I was losing so much water and suffered night cramps until I got my water intake under control.

I have learnt that water intake is essential. Taking honey off at the end of the day, I thought, "I'll just finish taking the honey off this last apiary," when my mouth went dry, I had a headache and suddenly I collapsed. I didn't notice anything wrong immediately and finished taking off the honey supers, but I'd burst a blood vessel in my eye. Within a day I had a big black spot in the middle of my vision. I left it too many weeks before getting attention and now one eye no longer focuses properly.

Keep drinking water. If your urine is yellow, you are not drinking enough.

[Editor's note: a version of this article originally appeared in the December 2010 journal.]

## The more things change ...

To mark the NBA's centenary, here is another historical snippet. This is part of an article originally published in the *Otago Daily Times* on 2 January 1913 and republished on 2 January 2013:

Apiarists as well as the consumers of honey may find the following information of interest: Recently the *Orchards and Gardens and Apiary Division of the Department of Agriculture* received for examination two samples of honey. No. 1, procured from a shop in Dunedin by the Government apiary instructor, was marked "Pure Extracted Clover Honey". No. 2 was received from a private gentleman, who obtained it from another shop in Dunedin. It was marked "Best Clarified Honey".

*These samples were submitted to the dominion analyst, who reports as follows: "No. 1 contains approximately 37 per cent of cane sugar. No. 2 contains added invert sugar. Neither of these samples is wholly genuine honey."*

- ODT, 2.1.1913.

### Source

*Otago Daily Times* (2013, January 2). Dunedin livens up for new year. Retrieved January 10, 2013 from <http://www.odt.co.nz/opinion/100-years-ago/241055/dunedin-livens-new-year>. Printed with the kind permission of the *Otago Daily Times*.



# Honey bee colony health

By Dr Oksana Borowik

Like most beekeepers, I am always on the lookout for the latest information on controlling varroa and keeping colonies healthy.

So it was with great excitement that I got my hands on a book published last year titled *Honey Bee Colony Health: Challenges and Sustainable Solutions*, edited by Diana Sammarato and Jay A. Yoder.

The book provides a review of the latest scientific information on factors that affect honey bee colony health, in 21 chapters written by 68 honey bee researchers from around the world. Although written for a scientific audience, keen beekeepers and researchers alike will find this book very useful.

The book does not offer a silver bullet for varroa treatment or a magic solution for preventing colony collapse disorder because currently, these do not exist. The book's strength lies in its clear review of the multitude of different factors that can distort the delicate balance of a colony and how these factors are interrelated—poor nutrition, diseases, parasites, pests, pathogens, pesticides, fungicides, and low genetic diversity. Having this multidisciplinary information together in such a volume will certainly help lead us to the answers.

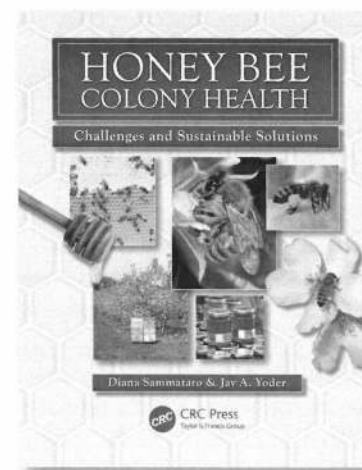
There are several chapters on varroa; one specifically on the "Global Status of Honey Bee Mites" was of particular interest. It reviews the biology of varroa, tracheal mite, and *Tropilaelaps*, with good figures and well-illustrated examples of their life cycle. *Tropilaelaps* causes similar effects as varroa on honey bees and also carries viruses such as the Deformed Wing Virus (note: tracheal mite and *Tropilaelaps* are currently not found in New Zealand). Techniques for monitoring

mites and the standard treatments for varroa are listed, including some new treatments that are being developed. Of all of the proposed new treatments and future of varroa research, the most exciting is RNA interference or "gene silencing", where a particular gene in the varroa genome would be selected and silenced, resulting in fatality.

Eminent honey bee researcher Ingemar Fries discusses breeding varroa-tolerant queens in a chapter on the "Evaluation of Varroa Mite Tolerance in Honey Bees." His recommendations for breeding varroa-tolerant honey bees are to select for two traits. The first is hygienic behavior. Fries stresses that selecting for this trait is inadequate in effectively controlling varroa due to a variety of reasons, but does have some limited positive effects. The second trait is mite population growth. Simply put, hives that have a smaller growth rate of varroa measured over a period of time are considered to have a greater tolerance to the mite and are selected for breeding. The author describes how to easily measure for this trait and gives a formula to estimate the mite population growth rate for queen breeders who are interested in breeding for this trait.

Sue Cobey tackles queen breeding issues as a co-author of the chapter "Status of Breeding Practices and Genetic Diversity in Domestic U.S. Honey Bees." Many New Zealand beekeepers have learned honey bee queen instrumental insemination from Sue, myself included. Though the chapter is on the status in the United States, New Zealand beekeepers may have had a parallel effect regarding genetic bottlenecks that reduce genetic diversity, such as limited historical importation of honey bee stock and queen breeding operations that produce large numbers of queens from a few queen mothers. Without genetic diversity, selecting and developing traits is difficult because the range of traits available is limited. The authors suggest that increasing honey bee genetic diversity by limiting genetic bottlenecks may improve the "perceived poor queens" issue.

The role of microbes such as bacteria and fungi and their importance in maintaining colony health is emphasised in several



chapters in this volume. Microbes are involved in a diverse array of tasks in the colony from fighting bad bacteria and fungi, helping with food digestion (nutrition) and food preservation, all the way to affecting gene expression and "social immunity." It quickly becomes evident that we currently lack an understanding of the role of fungicides and antibiotics on microbes in the colony and how the colony is then affected. The authors raise an interesting question in terms of how microbes may be affecting queen breeding. They suggest that the higher queen supersedure rates today may be because queen pheromones have been altered by compromised microbes in the queen. Further study needs to be done to determine whether microbes affect the queen pheromones that signal her presence to the hive.

For anyone with an interest in learning more about honey bee viruses, there is an excellent chapter that covers everything you ever wanted to know and more. There are detailed descriptions of almost all of the identified honey bee viruses including transmission routes, associations with varroa and nosema, and seasonal incidence. It becomes evident that viruses that appear dormant in a honey bee colony can easily become active in a stressful environment, such as when they interact with other pathogens and parasites. The chapter reviews different management strategies to reduce the risk of viral transmission, from apiary placement to the risk of importation and even queen rearing, as drone semen is now known to be able to transmit viruses during mating, whether naturally or by instrumental insemination.

Last but not least, with all of the conflicting information on pesticides, there are two→

## BURNING QUESTIONS

# Requeening aggressive bees

enlightening chapters that cover how pesticides affect honey bees. Examples include pesticides such as neonicotinoids and phenylpyrazoles used on crops, pesticides such as pyrethroids and amitraz used in hives by beekeepers, as well as natural pesticides like thymol and organic pesticides such as formic acid and oxalic acid. What becomes clear in reading these chapters is that the additive or "synergistic" effect of the different pesticides building up within a colony may contribute to colony collapse. In other words, a pesticide that may be "safe" to honey bees on its own, when found in a hive with other residues, may act completely differently. The authors Mullin and Frasier give an example of one of their recent studies in 2010 on pesticide residues. They took 887 wax, pollen, honey bee, and other hive samples in CCD hives in North America and found 121 different pesticides and metabolites (with an average of six pesticides found per sample). These included pyrethroids, organophosphates, carbamates, neonicotinoids, insect growth regulators, chlorinated cyclodienes, organochlorines, formamidine, miscellaneous miticides and insecticides, synergists, fungicides, and herbicides (p. 155–156).

It would be impossible to convey all the information in this book in a short review as there are more chapters on how honey bee disorders affect pollination, how to calculate and report colony losses, small hive beetle, and nosema, though the chapters on nosema are highly technical. For those who are interested in following up the references in the book, there is a comprehensive reference section that lists many recent major research papers.

Though people who read the primary scientific journals and are familiar with the latest scientific information will find gaps in the information presented, overall this book is an excellent reference for beekeepers who are interested in the science. The book is available online at [www.amazon.com](http://www.amazon.com) and costs approximately NZD\$120.

I encourage all beekeepers with an interest in honey bee science to educate themselves from this handy and reliable source.

*Dr Oksana Borowik is a scientist and commercial beekeeper in the Coromandel. Book cover graphic reprinted by permission of the publisher, CRC Press.*



**Question:** I visited another beekeeper the other day. His set-up reminded me of the hives I had in South Africa: very, very aggressive. I think the whole lot came out to take their revenge on us for daring to open them up.

I suggested to him that he should requeen them now, to rid the hive of that strain. *[I'd like] your thoughts on requeening: should I do it now? Or would that disrupt the honey flow? My reasoning is that the owners cannot go near to cut down the weeds and cut the grass, without them [being] stung.*

### Answer from Frank Lindsay

Requeen now. A brood break will also mean more honey as well. Order one now so that it arrives next week.

Before she arrives, smoke the hive, wait two minutes and smoke the hive again. Giving time for the smoke to mask the alarm odour should make them a little easier to work and should drive the queen up into the second super.

Divide the brood nest in half with a queen excluder, or use more excluders if there is brood in more than two supers. Leave for four days and then check each super for eggs. The presence of eggs means the queen is in that super. Move that super about 10 feet away and leave it for half an hour. Most of the field bees will have returned to the hive by then, so finding the queen will be easier.

As you remove each frame, look down on to the facing frame's surface for the queen. Often you will see her scurrying away from the light (she stands higher on the frame than the rest of the bees). Then examine the frame in your hand for the queen, looking around the outside of the frame working into the centre on both sides. Because the bees will have settled down and reduced in number, she will be easier to spot.

Still can't find her? Put an empty super with a couple of frames under a queen excluder and place the super with the queen on top. Remove the frames one by one, shaking the bees off into the super. Smoke the bees to drive them through the queen

excluder to the frames below. The queen will be amongst the bees left on top of the queen excluder.

Sometimes it's difficult for beekeepers to kill a queen, but it is necessary in this case. Run her through with the hive tool, and then put the hive back together again.

Leave the hive until evening, then put the new queen still in her cage in the hive, minus the attendants. Don't release the candy tab yet. (To remove the attendants, open the cage slightly in front of a window and allow the worker bees to come out of the cage. If the queen attempts to come out, cover the opening with your thumb until she goes to the back of the cage again. Repeat until all the attendants are out.)

Wait three days, then go through the brood nest (the super that had the queen) and destroy any queen cells the bees will have made. These will be on the face of the comb where there were eggs and very young larvae. Dig them out with your hive tool.

With experience, you can tell by the action of the bees on the face of the queen cage whether the bees have accepted the new queen. A dozen bees on the cage feeding her means she has been accepted. The odd bee pulling or with its abdomen down in a stinging action means she hasn't yet been accepted.

There can often be more than one queen in a hive. My record this season was three: one older one, one big new beauty and another young one which I transferred to another nuc.

If you see no real reaction on the cage, then release the candy tab so the queen can be released. If there's some reaction, wait another couple of days and check again for eggs and queen cells, then release the candy tab. Add another honey super, and check for eggs in 10 days. It will take six weeks for the bees to change over to the new queen's bees. They should be a lot gentler.

*Do you have a burning question about beekeeping? Simply email it to [editor@nba.org.nz](mailto:editor@nba.org.nz) and we will post the answers in a future issue of The New Zealand BeeKeeper.*



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