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The NEW ZEALAND BeeKeeper

The health of our bees

- Exotic disease surveillance update
- Using quarantines to eliminate AFB • More on observation hives

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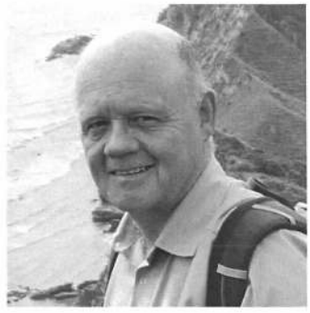
The health of our bees

By Barry Foster, NBA President



In 2010, as part of its programme of emerging issues and early warning assessments, the United Nations Environment Programme (UNEP) compiled a report entitled *Global honey bee colony disorders and other threats to insect pollinators.*

Within the report's conclusion the authors said,

> *"Pollination is not just a free service but also one that requires investment and stewardship to protect and sustain it. There should be a renewed focus on the study, conservation and even management of native pollinating species to complement the managed colony tradition. Economic assessments of agricultural productivity should include the costs of sustaining wild and managed pollinator populations".*

Parliament's Local Government and Environment Select Committee decided to take a look at the New Zealand situation in the light of this report. What followed in 2011 was a series of testimonies on pollination security from various organisations including the NBA. The select committee report and testimonies are available from Parliament's website at http://www.parliament.nz/en-NZ/PB/SC/BusSum/a/0/d/00DBSCH_INQ_10569_1-Briefing-on-pollinator-security.htm

Being largely dependent on agriculture for our income, and being an island nation, New Zealand is more vulnerable to any sudden and sustained losses of honey bees. Unlike many other countries we have fewer non-Apis species to complement the pollination services that honey bees provide. Widespread colony losses seen overseas are often attributed to an as-yet fully explained combination of stressors, including pests like varroa, pesticides, nutritional decline and the physical demands we put on our bees. Most of these stressors are already found in New Zealand with some notable exceptions, such as a suite of exotic pests and diseases that have not yet found their way to our shores. All beekeepers and associated industries should know about these facts, and indeed most do. Varroa is by far the greatest current and future risk to the health of our bees and it is likely that most beekeepers would acknowledge that fact.

Dr Mark Goodwin, representing Plant and Food Research, gave testimony at the Local Government and Environment Select Committee hearing. National Party MP Nicky Wagner asked him:

> *"So, if you were us and you were saying 'We want to do something about bee health and protect ourselves from colony collapse', what would you suggest that we put in our report?"*

Mark replied,

> *"the biggest issue facing the bee-keeping industry at the moment is varroa that are resistant to chemicals. I don't know that beekeepers even understand what's about to descend upon them—well, the guy who's just lost 300 hives has got an indication. But that's a major issue and around the world everybody's facing that and everybody's struggling with that. But that's the real biggie that's sitting out there. What impact it's going to have here? Our bee-keeping industry is probably the best-educated one in the world.'"*

This is not to in any way diminish the importance of the other stressors but after 12 years since first being found we are heading towards problems associated with long-term exposure to varroa. These problems include resistance to synthetic controls and an exacerbated susceptibility to other stressors as previously mentioned.

It was with these thoughts on the health of our honey bees and the potential for widespread colony losses in mind that I spent a day in Wellington recently with our CEOs Daniel Paul and Pauline Downie. Over the previous month Daniel and Pauline had arranged a series of meetings, including one with the Minister of Agriculture David Carter. On the subject of varroa resistance the Minister first said that 'It was an industry problem'. Further discussion followed that led to a later meeting with senior MAF officials David Hayes, Paul Bolger, Howard Pharo, Matt Stone and Katie Owen. These discussions have resulted in the formulation of a position paper on these topics that will be submitted to the Minister by mid April. I hope to provide an update in the next issue of the journal.

> **"...there is no overarching official view—let alone action—on the health of our bees."**

The CEOs and I also met with the following industry representatives and MPs:

- Catherine Beard of Export New Zealand
- Frances Clement of the New Zealand Pork Industry Board (NZ Pork)
- Simon Terry and Stephanie Mills of the Sustainability Council of New Zealand
- Leigh Catley of Horticulture New Zealand
- Steffan Browning MP, Agriculture spokesperson for the Green Party
- Damien O'Connor MP, Agriculture spokesperson for the Labour Party.

We are waiting for action

There is a convergence of public concern about the plight of honey bees that has been expressed in various media reports

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(some of which the NBA has taken part), plus a somewhat distorted view in films like 'Queen of the Sun'. For the Government's part, there is no official recognition that we have a problem here and nothing has as yet transmitted into action. Yes, there has been eight years of research largely funded by the Sustainable Farming Fund that has led to the development of VSH bee stocks, as well as work being done by Betta Bees Ltd, and by queen breeder David Yanke and his partner Rachel Kearney.

However, there is no overarching official view—let alone action—on the health of our bees—nor is there any independent testing of pesticides and their effect on all stages of our bees' development. There is no official monitoring of the extent or implications of varroa resistance, nor are beekeepers reporting large losses or even a need for greater numbers of annual replacements, partly because no one is seeking this information. The NBA applied for funding to conduct a survey of bee losses through the research company BERL (Business and Economic Research, Ltd) as a start. However, this bid was unsuccessful and we intend discussing the topic of a bee loss survey and reasons for it at our AGM at conference.

The Government targets the food and beverage sector among other sectors in its Economic Growth Agenda, under which sits reports like that from the Green Growth Advisory Group headed by businessman Phil O'Reilly, who spoke at last year's NBA AGM. Neither report mentions the critical factor that adequate pollination brings to sustaining, let alone growing, New Zealand's economy. On the other hand, to adequately tackle these problems requires a good degree of unity within our industry, and that is the other big issue sitting out there.

In a climate such as this, failure to recognise, let alone address the looming problems besetting pollination in New Zealand, could well result in a scenario of too little, too late, because in the end it all depends on the health of our bees.

Reference

United Nations Environment Programme (UNEP). © UNEP 2010 - UNEP Emerging Issues: Global Honey Bee Colony Disorder and Other Threats to Insect Pollinators. Available from http://www.unep.org/dewa/Portals/67/pdf/Global_Bee_Colony_Disorder_and_Threats_insect_pollinators.pdf

The National Beekeepers' Association of New Zealand

Annual General Meeting

The AGM of the NBA will be held at the War Memorial Conference Centre, Napier, on Thursday 28 June 2012, commencing at 9.00 am.

The opening speaker at the AGM will challenge you and pose some interesting questions about the future of the industry.

The AGM offers the opportunity for new Ward Representatives to be elected. Below are the Wards that are coming up for re-election this year:

Northern
Bay of Plenty
Southern North Island
Central South Island
Lower South Island

Contact your local Branch secretary to find out when the next branch meeting is to be held as election of Ward Representatives will take place during branch meetings prior to the AGM.

A nomination form for a ward representative is available from your Branch secretary or can be downloaded from the Members Only area on the website.

Attending the AGM is a great way of keeping up with the current events and opinions in the beekeeping world and to have your say via a vote on key issues that affect you.

Check the website www.nba.org.nz for information on the conference and AGM.

We look forward to seeing you at the AGM. Let's make it the best ever.

Barry Foster
President

YOUR ATTENTION PLEASE!

NBA SEMINARS AND CONFERENCE 2012
24–28 June 2012
Napier War Memorial Conference Centre

The conference invitation and registration materials were included as an insert in the April journal.

It appears that some people may not have noticed this insert or may have discarded it, as it is no longer stapled into the journal due to space and cost considerations. This change took place starting with the 2011 conference.

If you need a copy of the insert, you can download these materials from the NBA website at http://nba.org.nz/news-events/events/conferences

Alternatively, Branch secretaries and hobby club secretaries have also been provided with a pdf of the insert for distribution to their members.

A late registration fee of $30.00 will apply for payment after 31 May 2012, so don't delay!

Exotic disease surveillance: autumn 2012

By Byron Taylor, Apicultural Officer, AsureQuality Limited

Every year a number of apiaries throughout New Zealand are selected to provide samples for the Honey Bee Exotic Disease and Pest Surveillance programme. Here is an update for autumn 2012.

All hives in the selected apiaries are surveyed during the autumn by experienced apicultural professionals who have a keen interest in the wellbeing of the New Zealand beekeeping industry. The programme is funded by the Ministry of Agriculture and Forestry (MAF), and managed by AsureQuality Limited.

The annual surveillance programme has two primary goals:

1. to detect an exotic pest or disease early enough for an eradication attempt to be considered.
2. to enable New Zealand to make country freedom statements with respect to exotic pests and diseases which help facilitate the negotiation of more favourable overseas market access conditions.

The sampling specifications for the programme this year have remained largely unchanged from last year. A total of 650 apiaries in two risk categories will be sampled for a range of pests and diseases of importance to the beekeeping industry. Every hive in each of the apiaries is required to be inspected and tested in order to maintain the sensitivity of the surveillance programme.

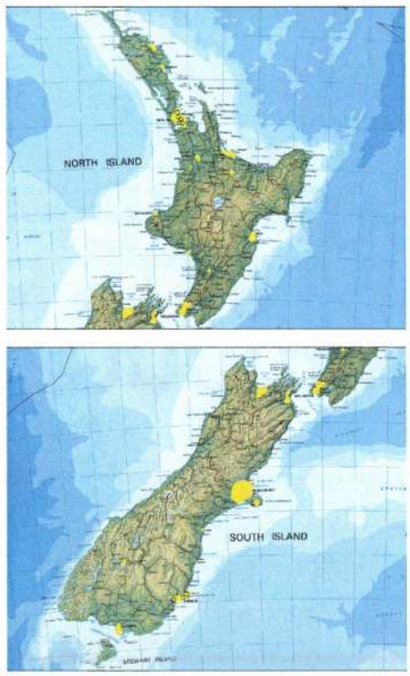
Exotic pests and diseases of interest have not changed from previous years and include:

- Africanised Honey Bee *(Apis mellifera scutellata)*
- Cape Honey Bee *(Apis mellifera capensis)*
- other Apis species *(cerana, dorsata etc)*
- Asian mite *(Tropilaelaps clareae, Tropilaelaps koenigerum)*
- Tracheal mite *(Acarapis woodi)*
- European foulbrood *(Mellisococcus plutonius)*
- Small Hive Beetle *(Aethina tumida)*
- the Parasitic Fly *(Braula coeca)*

Inspection programme outline

The programme is split into two components:

1. the inspection and sampling of a number of apiaries in high-risk areas, as shown in the following maps.
2. the testing of bee samples provided from apiaries for which clearance is required to supply bees for export.



Photos supplied courtesy of AsureQuality Limited.

High-risk areas

350 apiaries from within high-risk areas will be inspected and sampled for the exotic pests and diseases mentioned above. High-risk areas are areas that have been identified as most likely points of introduction of an exotic bee disease or pest and include:

- seaports
- airports
- large population centres
- tourist areas
- transitional facilities.

This year we are surveying apiaries from the same 19 high-risk areas as last year (as shown on the accompanying maps).

As was initiated last year, for the larger population centres including Auckland, Wellington, Christchurch and Dunedin the sampling methodology ensured that at least 50% of apiaries selected in each location were within three kilometres of a transitional facility (places where imported consignments are unpacked). Transitional facilities are likely to have higher incidences of unwanted organisms due to high numbers of containers being devanned at these sites. Given that this programme is highly targeted to areas or sites of highest risk, it is likely that some apiaries will be sampled more frequently than others from year to year.

This year we are also trialling a new method of collecting external mite samples (via the miticide and sticky board test) in two high-risk locations. The locations are Palmerston North and Queenstown. In these areas, rather than the inspectors placing the miticide and sticky boards in the hives and collecting them the following day, the hive owners themselves will carry out the test.

Affected beekeepers have been provided with sticky boards and new miticide strips for each of the hives in the selected apiary or apiaries. The miticide strips provided will be the autumn varroa treatment for that apiary. Beekeepers have been asked to place the miticide strips in their hives when they would normally do their varroa treatment as usual, but also to place the sticky board in the hive at the same time. The next day the sticky boards are removed and stored for collection by the inspector at a later date. It is hoped that by ensuring that the sticky board is placed in the hive on the first day of

the autumn treatment, the sensitivity of this part of the surveillance programme would be increased.

The beekeepers carrying out the inspections, in addition to being highly experienced, are recognised as Authorised Persons (Level 2) under section 103 of the Biosecurity Act. This means that they have the legal authority to enter property for the purpose of inspection and sampling hives under the direction of an AsureQuality Apicultural Officer. However, the inspector will endeavour to contact the owner prior to any hives being inspected to arrange a suitable inspection time.

In order to achieve the required detection sensitivity, every hive in each of the selected apiaries is to be tested. Hives will receive a 24-hour miticide and sticky board test to detect infestations of external mites and will have an adult bee sample taken to be tested for tracheal mites (*Acarapis woodi*).

KeyStrepto sampling in Te Puke, 9 September 2011. Photo courtesy of AsureQuality Limited.

In addition to the routine sampling, hives will receive a visual inspection for signs of European foulbrood, Small Hive Beetle, Africanised Honey Bee, Cape Bee, other Apis species and *Braula*. In some cases, suspect samples will be taken while in others (particularly if there is a threat to human safety), the hive will be reassembled and marked for further investigation and/or sampling. The inspectors will also note any unusual symptoms. All samples are sent to MAF's Investigation and Diagnostic Laboratories (IDC) for identification.

If your apiary or apiaries is selected to be inspected you will not be advised of the results of the tests unless they are positive. If a test does come back positive, an exotic disease response will most likely be launched. An article will be placed in *The New Zealand BeeKeeper* journal later in the year summarising the results for the programme this year.

Bee samples from export supply apiaries

300 apiaries, from the population of apiaries supplying bees for export, will have an adult bee sample taken and tested for both internal and external mites. Each supplier is required to provide samples from up to 25 apiaries that they use to harvest bees for export. All samples are sent to MAF's Investigation and Diagnostic Laboratories (IDC) for inspection.

As with the high-risk samples, beekeepers are not informed of negative test results.

Apiary database

The Honey Bee Exotic Disease Surveillance Programme relies heavily on the apiary database for the design of the surveillance programme and the selection of apiaries to inspect. Because of this, MAF provides 25% of the funds through the Honey Bee Exotic Disease Surveillance Programme to collect and maintain the information on the database. MAF also funds a further 25% of the costs towards the upkeep of the apiary database from other areas.

What you can do

While it is important for the surveillance programme to inspect and sample hives, it is even more important for all beekeepers to be always on the lookout for an exotic pest or disease. Read the pamphlet on exotic bee pests and diseases of honey bees and when you are inspecting your hives, always look for signs of an exotic disease. If you suspect an exotic pest or disease ring the MAF Exotic Disease Hotline 0800 809 966, or contact your local AsureQuality Apicultural Officer on 0508 00 11 22.

Lastly, thanks to all those beekeepers who are taking part in the 2012 programme. Both AsureQuality and MAF appreciate your continued support.

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Who do you call?

ASUREQUALITY LIMITED

http://www.asurequality.com
Ph: 0508 00 11 22

- Annual Disease Returns (ADR)
- Certificate of Inspections (COI)
- Disease Elimination Conformity Agreements (DECAs)
- AFB Destruction
- AFB Finds

REGISTRARS OF BEEHIVES
North Island – Bob Derry, Registrar
Ph: (07) 850 2837
Email: derryb@asurequality.com

South Island – Margaret Roper, Registrar
Ph: (07) 574 2596
Email: roperm@asurequality.com

AFB RECOGNITION COURSES

Rex Baynes (contact details on page 3)

NATIONAL OFFICE UPDATE

By the NBA Secretariat

An easy way to become an NBA member

The NBA is offering a 'payment scheme' for beekeepers who want to join (re-join), but who are finding the lump-sum subscription a bit too much this year, given the poor season some beekeepers have had. Therefore we are offering members the opportunity to pay their subscription on an agreed time basis. Hopefully this will benefit members and encourage beekeepers to sign up (again). So you can now renew your membership by completing the 2012 subscription form (go to the NBA website or ring us and we will send you a copy).

If you request an agreed time payment we will invoice you for the full subscription level, and you can establish an automatic payment to make regular monthly payments. You will then receive back issues of the Journal and be entitled to all member benefits. If this helps, just give us a call.

Getting the rules right

The 2011 AGM recommended that the NBA review its rules. This work is well under way and we now have legal advice that will lead to a report with recommendations for change. If we can chivvy the lawyers along, we hope to present this report to members at the 2012 AGM in June.

A slow but important process ...

The Industry Working Group on GIA has continued to meet and work with MAF to address some of the main concerns about this vital government/industry agreement.

The GIA Industry Working Group is continuing to work on a number of issues, specifically focusing on:

- finalising the MoU (the NBA Executive have given their support)
- discussing the GIA Secretariat (work in progress)
- determining the next stages, inclusive of Deed progression.

The NBA, together with other agri-industry groups, is involved with the processes. The next meeting is likely to see the job description for the 'Manager GIA Secretariat' finalised.

It is a long-term process and it does seem to have dragged on, but hopefully the results will be well worth it.

Don't miss this one!

To help beekeepers get a better feel for how they'll be affected by the government's proposed GIA biosecurity programme, we are working with the Department of Primary Industry (DPI) to put on a role play 'exercise' at conference. The idea is to showcase how a pest or disease incursion would be handled 'for real' under the new GIA rules. This is a great opportunity for beekeepers to see for themselves how GIA will affect our industry. The exercise will be held on Tuesday, 26 June from 3–5 pm.

Calling all beekeeping clubs

The NBA is keen to work more closely with beekeeping clubs around the country to see how the Association can add value to the clubs' members.

As part of this, the Association has put together a small 'project team' that includes a range of beekeeping clubs. This project team has been working with the NBA secretariat to discuss issues and challenges for the clubs, and to canvass what the NBA can do to provide clubs with additional value and benefits.

We have developed a brief online survey that club members have been answering and which will provide the NBA Executive with useful feedback from clubs. We'll keep you posted on this one.

Thanks, Philip. Good on you, Neil.

Neil Stuckey (Northern Ward) has been elected as one of the three NBA representatives on the Bee Products Standards Council. Philip Cropp has stood down after two years on the Council. Neil will attend the next BPSC meeting in Wellington. We'd like to thank Philip for all his hard work. It's definitely appreciated. And we wish Neil all the best in his 'new role'.

Working together on varroa resistance

As a result of Barry's meeting with the Hon David Carter, we are working with the Department of Primary Industries to scope the looming problem of varroa resistance in New Zealand. Daniel Paul is currently drafting a discussion paper that, hopefully, will lead to the development of a DPI/NBA work programme to address this issue. It's early days, but DPI is certainly comfortable about being involved and providing what assistance it can.

Rainbow Honey steps up, too

Daniel Paul has been working closely with Plant & Food Research and other stakeholders to finalise the various agreements and licences for the commercial breeding of varroa-resistant bees. As part of this project, Rae Butler of Rainbow Honey is now in the USA and will be working with Sue Coby for the next few months. She intends to come back from the USA competent in artificial insemination procedures and intent on managing a breeding programme designed to produce varroa-resistant bees. More about this soon.

Does this work for members?

In a bid to help NBA members access a range of discounted products and services, we have stepped up our efforts to form partnerships with companies we think market stuff that beekeepers want/need.

Our goal is to have a long list of product and service providers who are willing to offer our members discounts on important and often-used items. This is one way we can offer some tangible value to members. Keep an eye on the website for updates.

2012 Bee Week

This year the NBA is taking a different stance with Bee Week. It has been determined that the most important audience this year is the general public. The NBA feels strongly that we need to leverage the already widespread interest in bees and we need to maximise the support the industry gets from members of the public, especially around biosecurity issues.

Bee Week 2012, which runs from 20–24 August, intends to highlight that while New Zealand bees are not under immediate threat, they do need to be actively protected.

This year's campaign, "Love our Kiwi Bees", aims to give the public practical advice and tips on things they can do to help protect our bee populations. A key focus is to reach out to young people and families to help create lifelong mindsets around the value of bees.

This year's Bee Week is heavily oriented to community and media activities designed to heighten public engagement.

Using quarantines to eliminate AFB

By Dr Mark Goodwin, Apicultural Research Unit, Plant and Food Research, Ruakura

The most powerful tool for American foulbrood disease (AFB) control, other than adequate inspections, is the use of quarantines.

Quarantines restrict beekeeper movement of equipment, and consequently AFB, between hives or apiaries. The effectiveness of a quarantine is dependent on how strict it is. Quarantines do, however, usually require more time and a higher level of organisation.

Quarantines are effective because most AFB is spread by the movement of equipment between hives rather than by the bees themselves. We know this because there are many examples where two beekeepers have their apiaries interspersed in the same district. One of the beekeepers may have a very high level of AFB where the other beekeeper has a very low incidence. If AFB was mainly spread by bees, rather than beekeepers, the incidence of AFB would be expected to be relatively uniform within an area.

Hive quarantine

By far the most effective type of quarantine is a hive quarantine. This is where equipment is not moved between hives so that the only way for a colony to become infected is through robbing a diseased colony or even less likely by drifting bees. As long as care is taken to ensure colonies don't die, robbing should be a reasonably rare event in most cases.

Those beekeepers with AFB problems who have initiated a hive quarantine have found it has been a great comfort to know that they will no longer spread AFB between their hives. The value of peace of mind when you are struggling with AFB cannot be overemphasised. Once a hive quarantine has been instituted, all a beekeeper usually needs to do to solve their AFB problem is to try and keep all hives alive and find the hives that are already infected with AFB and destroy them.

To be able to implement a hive quarantine it is necessary to individually number each hive. This can best be carried out by nailing a numbered sheep or cattle ear tag on the front of the floorboard. You can buy tags with printed numbers or blank tags that can be written on with a tag pen. It is important that the ear tag is attached to the floorboard rather than to a brood box. Even if the tag is attached to the bottom brood box, brood box positions get changed and the box may end up as a honey super. This will then be removed with the honey crop, leaving the hive unnumbered.

> "The value of peace of mind when you are struggling with AFB cannot be overemphasised."

For a hive quarantine nothing should be removed from a hive with the exception of honey supers. These must be numbered with a felt pen, extracted and the frames returned to the same super. The numbered supers need to be dried out on the hives they came from or be stored where they cannot be robbed and then put back on to the same hives in the spring. Feeders, excluders and other equipment should only be removed from a hive if they are also numbered so they can be returned to the same hive.

Hive quarantines have the advantage that AFB inspections do not need to be carried out when the honey is being removed as the supers and frames will be returned to the hives they came from. A second advantage is that the AFB inspections need not be as frequent or as comprehensive. If an AFB hive is missed, unless the hive is robbed out, there is little opportunity for the disease to spread.

Hive quarantines require significant additional work, however, they are not as bad as they sound. You do not have to save burning many hives before they are worth carrying out. They can also be very effective. One commercial beekeeper we were working with had a 25% AFB incidence when the problem was detected. The beekeeper destroyed the infected colonies and instigated a hive quarantine. The next year the incidence was 10%. These were almost all AFB colonies that were infected the previous year. The incidence the third year was only 2%.

Hive quarantines have the advantage that they can be easily used by migratory beekeepers or beekeepers carrying out pollination as the hives do not have to be returned to the same sites. Lists of which hives are at which apiary need to be recreated, however, so the boxes can be sorted in the correct order in the spring.

Careful thought needs to be given to stored equipment. If there is a high AFB incidence it might be better for it to be destroyed or wax dipped.

Apiary quarantine

An apiary quarantine is significantly less effective than a hive quarantine at dealing with AFB problems but very much easier to institute. It consists of keeping the equipment from each apiary separate. Although AFB will still be spread between hives in the same apiary, it will not be spread between apiaries. Once an apiary is clear of AFB it should usually stay clear. Hives in an infected apiary may, however, still become infected until the disease is eliminated or all the hives have been burnt.

Apiary quarantines are also a good safety precaution. If an AFB problem does occur it will be restricted to a single apiary rather than being spread through an entire beekeeping outfit.

It is possible to carry out a hive quarantine at the same time as an apiary quarantine. The hive quarantine can be used in apiaries →

with AFB while the equipment from hives in apiaries without AFB can be mixed together.

Apiary quarantines are difficult to manage for pollination beekeepers as the hives need to be sorted and returned to their original sites after pollination.

Outfit quarantines

The third option is an outfit quarantine. This is where a beekeeping outfit is divided into two on paper rather than physically. All apiaries where AFB has been found are included in one half and the clean apiaries in the other half. As apiaries are cleaned up or become infected they are swapped between halves. The method is much less useful than a hive or an apiary quarantine but can have its place.

Again, an outfit quarantine can be used in conjunction with an apiary or hive quarantine. Uninfected apiaries can be managed together while an apiary or hive quarantine can be instituted for infected apiaries.

[Editor's note: This is the sixth article of a series that has been written for the Management Agency for the American Foulbrood National Pest Management Strategy. These articles were first published in 2003, and have been reviewed and updated where necessary. The original title was 'The use of quarantines to eliminate AFB'.

We will run these articles on a regular basis over the year. The articles will cover a range of aspects of American foulbrood control, including how to inspect for and identify diseased colonies, the management of colonies to prevent American foulbrood and a beekeeper's legal obligation with regard to American foulbrood.]

Being able to identify AFB scale in a hive can be a useful way of identifying infected colonies even after they have died.

Source: Elimination of American Foulbrood Disease without the use of Drugs: A practical manual for beekeepers (revised edition), *by Mark Goodwin, page 39.*

LETTER TO THE EDITOR

Critique of Tutin programme

[Editor's note: last month, Jim Sim of MAF's Animal Products Group reported on the 2012 Tutin Standard Review (page 26). The following letter was written in response.]

Again we are subjected to Mr Sim *[being]* upset that beekeepers are not supplying tutin results for their honey. The whole programme was designed without any scientific evidence as a basis, and in the long (or perhaps short) term will not stop a repeat of Tutin poisoning.

Mr Sim says that some of the information supplied by beekeepers is essentially useless. Obviously Mr Sim has never put himself in the position of a beekeeper trying to fill in the required form. It would take a month of Sundays to do it for all our tested honey. If we ever did have honey with a Tutin content we would actually supply Food Safety with the information, as it is the positive results that give the pattern Food Safety wants. If all honey is tested then the positive areas are all that need consideration.

Mr Sim's article actually does not get to the nitty-gritty of the problem. With so many new beekeepers starting up to "save the planet", it is obvious that some will start up in Tutin risk areas, and then affected honey will reach the general public, unless we see a return to the Apiary Advisory Service to advise new beekeepers and return to the previous control system that worked so well.

At present Food Safety's only response would be to charge a person for supplying food unfit for human consumption without ignorance being an acceptable defence and without accepting Government fault as the primary cause, because of removing advisors from the field.

Yours, Gary Jeffery

Response from Jim Sim

In response to Mr Jeffery's letter commenting on the lack of data supplied by beekeepers as required under the Tutin Standard, we note that the old adage is true: "Absence of evidence is not evidence of absence". Negative results are every bit as important as positive results to define areas where problems do or do not exist. Until and unless there is certainty about which areas have tutin problems and which do not, there is no realistic possibility of being able to remove areas from application of the Standard. This requires all beekeepers in an area to submit full data so that we can obtain a picture of the risk that is as comprehensive as possible for a particular area. Many positive results were not reported too so it's not just a case of negative results not being sent in.

It's not clear which of the previous "control systems" Mr Jeffery is referring to; however, the areas covered by the old restricted areas in the Bay of Plenty and Coromandel did not include some of the areas where some of the highest tutin levels have been found now that commercial testing is available. There were constant problems with beekeepers having to remove hives from restricted areas by a certain date both from a logistics perspective and also from a compliance perspective. Hives were also often having to be removed when a honey crop could have continued to be collected safely.

The new system allows beekeepers to self-manage the problem now that commercial testing is available, and as one beekeeper in a traditional 'tutin area' put it to us, "I can now sleep easy at night".

It is the responsibility of every person selling food to understand the risks associated with their products and make sure they are safe. Information on tutin management and the standards to be met when honey is sold is sent to every new beekeeper starting up when they first register their hives.

We will be revisiting the requirements of the Tutin Standard again this year and look forward to continuing this conversation in that context.

In response to Mr Jeffery's last point, advisory services are generally provided by the private sector rather than by Government. Perhaps the industry could establish its own advisory service if it saw a need?

Jim Sim
Principal Advisor (Animal Products)
Standards Branch
Ministry of Agriculture and Forestry

An interview with Kerry Gentleman

Kerry Gentleman has been the Upper South Island Ward representative on the Executive Council since July 2010. The Secretariat interviewed her about her role and experience in the industry.

What made you decide to become a beekeeper?

We had a rather unorthodox entry into beekeeping. As dairy farmers in a former life, my husband and I decided we wanted to be self-employed again. We spotted 400 beehives for sale nearby and, despite knowing nothing about bees, we thought it sounded like a nice idea, jumped in the deep end and bought the lot! The year after we purchased our bees, the local extraction facility in our area closed so we then had to set up our own from scratch. The first few years were a very steep learning curve, but becoming a beekeeper was easily the best career decision I ever made.

Tell me about your current business.

We haven't grown much from our beginnings—we run around 500 hives now, purely for honey production and do some contract extracting. Before the varroa mite we were certified organic honey producers, which I really enjoyed. One day I would love to be a hobby beekeeper, and complete the cycle of entering beekeeping back to front!

What do you enjoy most about beekeeping?

The beekeeping industry is an exciting one to be a part of. The flowers, the market, the weather and the bees behave differently from year-to-year and season-to-season. That is what I love most about beekeeping—there is never a dull moment!

Why did you decide to become an Executive Council member?

I joined the Executive Council in the hope of making some positive change, especially in the area of research as it is a subject that I am truly passionate about. I now hold the role of Research Liaison. I believe that continuing research is crucial to beekeeping, particularly in the area of bee health. As most beekeepers know—and an increasing number of officials also now appreciate—New Zealand's bee industry contributes over $5 billion to the economy, and it's imperative that we have a good understanding of the threats facing our bees, and how to mitigate those dangers. One of the challenges that we face on the Council is the time commitment. As beekeepers we are all frantically busy anyway and finding the time to devote to Council activities can be challenging—but it's hugely important. One of the things on which this Council is working very hard is putting good governance structures in place. It's very easy to get bogged down in the detail but it's more important that we show leadership and attempt to provide some forward thinking and planning. We've got to remember that we represent a multi-billion dollar industry that underpins large chunks of NZ's agri-export economy. Therefore the Executive Council has to behave accordingly on behalf of members.

> "But, we have to act as a co-ordinated and unified industry..."

What issues and challenges do you see the beekeeping industry facing?

Beekeepers are lucky in that we, as an industry, tend to be really good at sharing practical knowledge with one another and it's great to see that level of collaboration. However, I think a major challenge for us is further co-operation: I think many of the issues we face could be lessened through unity and co-operation between the factions. This is something the Executive Council is very keen to encourage. Having said that, I appreciate that beekeepers are usually people with very individual—and very strong—opinions. That's great because it encourages debate about issues. But, we have to act as a co-ordinated and unified industry, speaking with authority and one voice on major issues, and working together if we are to wield the kind of influence that makes officials and politicians take notice of us. Infighting among ourselves doesn't help our cause. And this means that, as beekeepers, we have to try and take a more strategic and holistic view of our industry and the issues we face. That's certainly what the Executive Council is doing. Part of our job is to stand back from our own businesses and local operations and try and look at what's best for the industry across the whole of New Zealand. As part of this, we have developed a priority list of the major threats and issues our members face, and we are developing policies and plans to mitigate them as part of helping to protect members' business interests.

Kerry enjoying some downtime on the Heaphy Track. Photo supplied by Kerry Gentleman.

When you're not at work or attending a Council meeting, where will we find you?

If I'm not taxi-driving teenagers or helping out in the community I like to tramp, mountain bike, do a bit of gardening, and enjoy the sights and sounds of the beautiful Golden Bay.

Midlands Apiaries Limited

Midlands Apiaries Limited is a Mid Canterbury based business with a rich history over three generations with its former owners. Midlands purchased this business 5 years ago and are now on a major expansion program to increase hives to 5000 for the 2012/2013 season for honey production and seed crop pollination. To service the needs of Midlands we now have the following vacancies:

MIDLANDS APIARIES LIMITED

Senior BeeKeeper

We have a vacancy for an experienced Senior BeeKeeper to join the Midlands Team. The successful candidate will need to have:

- A minimum of 10 year experience beekeeping
- AFB certificate
- A current Heavy Traffic licence
- The ability to follow instructions
- Strong time management skills
- The ability to keep accurate & timely records
- A thorough knowledge of the yearly cycle and habits of bees
- Skills in identifying bee disease, and knowledge of methods of disease control
- Knowledge of how to introduce a queen bee into a colony
- Knowledge of plant types and life cycles, and how and when plants produce nectar
- Sound leadership skills
- The ability to work flexible hours.

As well as the above, it would be advantageous if you possessed:

- Carpentry skills for building and repairing hive boxes
- Mechanical skills for repairing equipment
- An understanding of bee genetics
- An understanding of hive manipulation for Queen raising.

This position is based in Ashburton or Staveley and applicants for this position must have New Zealand residency or a valid New Zealand work permit.

If you hold the above qualities and expertise you may be very surprised by the level of remuneration and overall employment conditions Midlands can offer. You are encouraged to apply.

To apply in strict confidence send your cover letter and CV to james.callaghan@midlands.co.nz or write to James Callaghan, Midlands Apiaries Limited, PO Box 65, Ashburton 7740.

For more information phone James Callaghan on 0274 581 431 or visit our website www.midlands.co.nz

Intermediate BeeKeeper

For this Intermediate BeeKeeper position we are looking for someone with at least 2 years experience working with Bees. The successful applicant would be a person that:

- Has a minimum of 2 years experience working with bees
- Has a high work ethic
- Enjoys working outdoors
- Isn't scared of a bit of old-fashioned hard work
- Is practical
- Is prepared to listen and learn
- Has the ability to work flexible hours.

As well as the above, it would be advantageous if you possessed:

- Carpentry skills for building and repairing hive boxes
- Mechanical skills for repairing equipment.

This position is based in Ashburton or Staveley and applicants for this position must have New Zealand residency or a valid New Zealand work permit.

If you hold the above attributes and you are interested you may be very surprised by the level of remuneration and overall employment conditions Midlands can offer.

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Pointing out

By Frank Lindsay, NBA Life Member

After standing up a couple of hives following the most recent blow, I decided to have a look further along the track at another potential apiary site that might be a little more sheltered.

Instead of my usual routine of backing in between the hives, I just nosed into the apiary with the truck to stand up hives and recover any damaged or robbed-out supers. When David (my volunteer help for the day) and I had finished, I backed out (while talking) and turned a little too early. Instead of ending up on the track, we came to a sudden stop when the truck dropped straight into a hole, leaving the back of the truck and lifter frame sitting on the ground.

I hopped out to assess the situation and found we were stuck but I had been very lucky. Both tyres had dropped into an old watercourse but the passenger side wheel was only another tyre's width away from a metre-deep hole that would have left the wheel floating in mid-air.

Getting stuck is not an uncommon situation when working out in the backblocks, in a deep valley, out of cellphone range and miles from civilisation. (There was civilisation nearby, over the top of a steep range of hills. Going in, we'd passed some hunters about to go out but otherwise there was no one else around.) To walk out would have taken hours and then there was the humiliation of getting stuck and having to ask for help. I'd told the farmer we'd be out just before dark (giving us extra time for unplanned events), so no one was coming to look for us for quite some time.

> "Sometimes it's hard to make good decisions when your heart is racing..."

I looked around and assessed our situation. We had food, a bruised pear and a bar of chocolate and lots of water in the creek, so we had the essentials. We had a generator and a blower (not much use) and a spotlight under the seat. I had an EPIRB but this wasn't a medical emergency.

So we went into 'how do we get out of this?' mode. I looked around for an anchor point for a cable: nothing, only small manuka bushes 10 metres away and I didn't have any ground anchors on board either. I got out the bottle jack and started lifting the rear spring to lift the tyre up to put rocks underneath. I was turning and turning the bar on the bottle jack, which was slowly winding up when I looked across the deck and noticed the two stabiliser jacks strapped on the back of the truck. These would be much easier and quicker to use.

Positioning one after the other I was able to lift one side of the truck and pack small rocks under the tyre, then I went around to the other side and did the same. This raised the tyres about 100 mm but if the truck slipped sideways we would be totally stranded, so David gathered boulders and we gradually filled in the hole under the truck. This left the tyres still partly in a hole with a climb of about 200 mm over grass to get us out.

I looked at the mud grip tyres and considered they wouldn't provide that much traction so I raised the truck even higher, this time putting on the mud chains, added more rocks under the tyres and another big one at the back to stop any backwards slippage. David used a hive tool to reduce the slope slightly and with David on the front bumper, I drove the truck out just above idle on a low ratio without any trouble at all. Whew—what a relief!

Now I have been stuck temporarily many times, in mud lots of times, and slid sideways off an old logging track that left half the back tyre over looking a three-metre drop into a creek. That incident was a really hairy one—in an old, two-wheel drive truck without a limited slip differential, I hooked up the lifter winch to a tree to pull the tail of the truck away from the edge. With the lifter strapped with cargo straps for added support and with the winch control through the window, I slowly pulled in the winch as I crept forward in the truck onto the track again. Well, that's what I thought I was doing. When I went →



From left to right: Truck jacked up. After the second lift: chains and more stones applied. Ready to roll with David as a counterweight. Photos: Frank Lindsay.

to unhook the winch cable, I found I'd been letting out the winch instead of pulling it in. That realisation aged me a bit.

Then there was the time I let a ute find its own way down a hill into a creek bed when I forgot to put the handbrake while going back to close a gate. Actually, when the ute started to move I jumped in through the partially open door, thinking I could stop it, but on second thought I didn't like the situation and jumped out again, preferring to let it go its own way. I wrecked a borrowed chainsaw and, while cutting branches out from under the truck, connected with the chassis. I had a long walk to find a phone (I didn't have a cellphone at that stage but purchased one the next day), called a tow truck and after half an hour, my truck was out again with just a bent bullbar and a smashed indicator light. On returning the next day in a calmer frame of mind, I realised that if I'd removed three small trees in front of the ute, I could have easily driven out.

Sometimes it's hard to make good decisions when your heart is racing, but this was the third time I've had problems getting really stuck, all while backing. Once a farmer pulled me out of a hole in a minute after I had tried for an hour to get out using cargo straps, a wire rope and a fencing strainer.

The second was going off track while backing down a slope covered with fennel that left the truck sitting on opposite wheels when a convenient crane truck came along and lifted me out and on to flat land again. The crane had been called to a ute in the same predicament as me not far away—it cost me only a dozen beer.

And now I'd got stuck for a third time. Lest you think I'm accident-prone, I'd like to remind you that I've been playing with bees for 40 years. Nevertheless, some of the memories are still vivid.

David reminded me of the rules his old beekeeping boss had taught him:

- take all your emergency gear with you. (The weather in this case was about to change so I'd taken chains. Perhaps I should consider adding a tent and sleeping bag to the list but there's not much room in my tinker toy of a truck.)
- park facing out of the apiary, especially when working into the dusk. When you are going to move hives at night, it's easier to see where you are going
- when you get yourself out of a tricky situation, check under the truck for damage. A brake line could have been damaged
- walk a new track first to discover any hidden obstacles or holes.

With this said, I'll try not to get stuck again.

Miss Piggy

By The Beekeeper's Wife

The Beekeeper's Wife enjoys accompanying The Beekeeper on his apiary visits.

On these occasions she makes sure that she is well togged up on account of a certain event very early on in her relationship with The Beekeeper.

It was on a visit to an apiary quite some distance out of town when a bee, with the precision and speed of an Exocet missile, shot out of nowhere and stung The Beekeeper's Wife just under her nose. Immediately, her face began to swell until her eyes became little piggy slits, her nose grew into a piggy-like snout, and her upper lip soon looked as though it might well be hiding some impressive chompers. "Oh!" chortled The Beekeeper, "You look just like Miss Piggy!"

By the time they had driven to the nearest medical centre, the swelling had reached its zenith and the immediate crisis seemed to have passed, but the piggy face certainly caused a stir in the doctor's waiting room. The doctor prescribed some antihistamine, and The Beekeeper's Wife remained sequestered away from public gaze for a day or two until her face resumed its normal human appearance.

Needless to say, antihistamine became an essential element in the First Aid box, but it has seldom been necessary to use it since, because The Beekeeper's Wife never approaches a beehive until kitted out in full beekeeping armour. The exception is that she has exchanged clumsy gauntlets for disposable gloves, which are close fitting and seem to disguise the human smell of her hands. They have the added advantage of keeping the hands free of honey, wax and propolis, and of peeling off easily when it's time to break out the sandwiches at lunchtime.

Never again has The Beekeeper's Wife had to suffer the indignity of becoming a Miss Piggy lookalike.

Have an anecdote?

All beekeepers have a wealth of tales to tell about their own sticky situations, mishaps or other near-disasters that are good for a laugh, even though it might take a while to see the funny side! Usually some good lessons are learnt that are well worth imparting to others.

If you have a good story or photos to share, please email editor@nba.org.nz. You can use a pseudonym if you prefer. Please provide photo captions and the name of photographer if possible.

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Buzzy Bee supports Bee Week. The NBA logo has been placed onto Buzzy Bee and a percentage of the profit on the products sold is contributed to the NBA.

NBA Photo Library

Often the NBA requires photos for media, newsletters, Bee Week and general enquiries. We currently hold only a very few photos on file.

If you have what you consider may be a prizewinning photo or two and you wouldn't mind them being used publicly and without copyright, please email them to secretary@nba.org.nz

Photos must be attached as a jpg file. Please email each photo with a title and/or caption, and don't forget to add your name so that we may credit you.

See page 3 for more info.

FROM THE COLONIES

Auckland Branch

We've had some lovely settled weather over the past couple of weeks, but with a distinct nip in the morning and evening air—temperatures not so conducive to honey flow. It's been a funny old season, for sure. Many beekeepers are finding that in the spells of bad weather the bees have made inroads into the crop they thought they had, and there is not so much to extract as they would have liked.

The recently published Auckland Plan contained, tucked away inconspicuously, an unwelcome suggestion of a charge for the privilege of having apiaries on public land.Thanks to the efforts of hobbyists and commercial beekeepers alike, we think that the issue has been laid to rest. Fingers crossed!

I heard a recent report from a friend in the northern reaches of the region who was walking on a clear, hot summer day through an ungrazed paddock bursting with white clover, red clover, lotus major, etc, and noticed a dearth of honeybees. He set out to conduct a more scientific search, and walked 400 metres before he saw a single bee. Either the flowers were not yielding for some reason, or the local population of bees in that area has sunk to a worrying level. This story just goes to underline the importance of keeping up the vital work of sustaining our bee population.

- Helen Sinnock

Bay of Plenty Branch

The Bay of Plenty was spared the worst of the recent easterly weather and we have been enjoying some settled autumn weather, allowing plenty of apiary time. Local reports are that hives are generally in good condition, although I don't believe hives are maintaining stores as well as previous years. Most beekeepers are finding that strip hive treatments are continuing to do the job.

Bruce Stanley recounts his season: "We have a few beehives in the Whakatane region, then later transfer them to the East Cape each year. The Rewarewa crop, during the October–November period, was a medium one, but that's OK. The main crop which, comes from Manuka, was about the poorest we've had from this region. We transported the beehives 2.5–3hrs to get less then 7kg per hive as an average crop. The causal factor was the continual wet period and harsh conditions during the flowering period. The now-intensive machine cutting, combined with the hand harvesting of easily accessible budded tips from the area, for Manuka Oil production, doesn't help much either. To this time we have lived with the Manuka Oil harvesting but where to from here? That's two poor years in a row now, but three years ago was a boomer, always hopeful. The autumn has been kind to us with the splits and requeening programme being successful and stores looking good. We have been able to continue with our normal 'strip varroa treatments' and seen no sign of any resistance yet, but always watching."

- Greg Wagstaff

Poverty Bay Branch

Rain, rain and more rain has made access to most bee sites in the district difficult or impossible. Fine weather is needed so that hives can be accessed for proper wintering down.

Autumn requeening has gone remarkably well considering the lack of finer days for virgin queens to fly and mate. Next season will see how long the queens can lay before turning into drone layers.

Very soon the season will be over and we can all take a breather and plan for next season.

Paul Badger, Branch President

Hawke's Bay Branch

Rain, drizzle and showers! Our non-existent summer was bad enough but autumn is turning out to be a real trial, with mega quantities of sugar being fed to hives throughout the Bay. It's enough to make you look forward to the next drought—at least in a drought you're not getting stuck all the time. A lot of horticultural crops are also suffering from lack of sunshine. For some reason there don't seem to be many varroa around this autumn and I have not heard of any reports of treatments failing yet, which is one good thing.

It can't rain forever and am sure the sun will come out for conference; I am really looking forward to meeting old friends and finding new ways of meeting the challenges that face beekeeping.

- John Berry, Branch President

NBA Conference update

The Conference invitation and registration materials were inserted into the April journal: see notice on page 7. Register now to avoid late registration fees.

Nelson Branch

What a fabulous spell of good weather we've had over the past few weeks.

There have been a number of reports from beekeepers of an excellent late honeydew flow enough to harvest and still leave something on for the bees.

Mouse guards are on and we will start to remove treatments in about a week. Most hives are looking really good with plenty of stores.

Wasps are a problem in some areas and have hardly been seen in others.

- Gareth Ayers

Canterbury Branch

The last couple of months have been frustrating in Canterbury with long periods of overcast damp weather, which has really impacted on queen matings. While matings have been slow this frustration has been nothing compared to the efforts grain farmers have had to go through to get in their crops. Drying facilities in this area have been their most utilised in years: no matter what happens, someone always seems to make some coin from it!

Late March saw a turn for the better weatherwise and matings appear to be back on track, albeit a little late for comfort. At least the extended brood break should mean these colonies will have a low varroa population. This inclement weather did nothing to help get an autumn honeydew crop; altogether one of the poorer honeydew seasons in a long time. →

Reports on varroa numbers seem to vary a lot depending on location (or the effort one puts in to looking?). I wonder if the amount of swarming in late November–December reduced the varroa burden on managed colonies. There are so many variables; however, if this is the case these swarms will start collapsing very late winter/early spring so might be something to watch for.

Demand for our product seems to be on the increase, so be careful of underpricing your efforts. One old-timer whom I considered very astute told me that 50% of potential buyers should tell you are overpriced in the first round of negotiations, or else you are giving the profits to the buyer.

- Brian Lancaster, Branch President

Otago Branch

It is late April and Otago has had a wonderful settled autumn so far with very little rain or wind. Some light frosts and a few morning fogs have been followed by warm afternoon temperatures. It has been perfect weather for wintering down.

I have just returned from a few days in Central and it is a classic glorious autumn picture. The towns are full of visitors enjoying the weather and the season has been bountiful for all. In recession? Not that you would know it.

The main issue for Central Otago beekeepers especially has been invasion pressure as varroa hits year two and ferals are obviously collapsing in big numbers. I hear some beekeepers, perhaps underestimating the severity of the situation, have lost some hives. For us nearer Otago's east coast and those further south, varroa is yet to be found and we appear to have had another year of reprieve.

This year's good crop and good prices will help meet the challenges and increased costs ahead. A well-earned holiday should be the next bit of business for most. Then see quite a few of you at Conference this year perhaps?

As we went to press we learned that varroa has been confirmed as being found in Central Dunedin and also in Invercargill. More about this in the June issue.

- Peter Sales, Branch Secretary

Apimondia Congress 2013

Super-early registration is open until June 2012 for the XXXXIII International Apimondia Congress, Kyiv, Ukraine, 29 September to 4 October 2013. You can download the super-early registration form at http://apimondia2013.com.ua/files/Api2013_regform.pdf. The full delegate fee for super-early registration is 150 euro.

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Autumn

By Frank Lindsay, NBA Life Member

The weather has cooled considerably but the bees are still flying during the warmer part of the day, bringing in a little nectar and pollen.

Not much is flowering in the country but hebe, rosemary and ivy are flowering around the suburban areas. Garden flowers have taken off again following a bit of a cold spell in February and this triggered regrowth when it warmed in March. Unfortunately it also stimulated a lot of beehives into brood production, and quite a few hives have turned their honey stores into bees and now require feeding.

I was a little surprised the hive in my garden had put on weight and it wasn't until talking to a neighbour that I discovered she had been putting honey out to feed the tui. I told her of the dangers of used store-bought honey that it could be a vector of American foulbrood and she has switched to sugar water. I'll give her some reject honey (spilt stuff) a little later when the tui really need it.

The robbers are out

It's been a prolonged robbing season. So far it has lasted from March and into early April. A few hobby beekeepers have reported hives robbed out and I have had the odd problem myself just recently.

The results of a day's battle defending the hive from robber bees.

One of mine was a hive collapsing with varroa mites—bees and wasps were robbing the hive from a crack between the top feeder and the super. I closed the entrance with grass and plugged the gap with foam plastic, then added a couple of frames of emerging bees and brood to boost the hive's population and give the hive some young bees that were able to produce royal jelly to support the hive's existing brood. I also put in some strips and an alternative treatment to help control the varroa mites. Next day they seemed to be OK although the odd bee still was trying to get into the hive.

Another robbing incident occurred when I moved some hives into an existing apiary. I have mesh floorboards so can transport hives during the day with the entrances blocked so the bees were all locked in. I didn't think about the possibility of robbing when I released the entrance foam to put in a grass plug to allow the bees to slowly orientate to the new site. A few bees were flying when I left but thought I'd check them out and when I passed the next day, I had a full-on robbing incident going at one hive. Once again, I closed all entry points and with luck the hive will recover.

Another incident began when I left two frames from a queenless nuc exposed. I was moving honey frames from the queenless mating nuc to some queenright nucs and left the unused frames exposed for about 10 minutes. When I finished checking the other three nucs, I noticed that I had a full-blown robbing session under way. To stop any robbing of the nuc hives, I closed all the nuc entrances with a plug of grass and then moved the exposed frames (now in a nuc box) about 100 metres away. The bees soon found the nuc box on the back of the truck so I left it closed, but the bees found the food grade mineral oil cords and were clustered all over the plastic bag (honey is used as an attractant on the cords and the bees could smell it through the hanger hole in the plastic bag).

After about half an hour cutting up some windfall branches for firewood, the bees dispersed so I walked back to the nucs. This time the coast was clear: only the field bees that I'd locked out were clustered around the entrances so I released the grass plugs on each hive.

Bees trying to get in through the ventilation grill on a nuc hive after the entrance was plugged. Photos: Frank Lindsay.

If you are still experiencing robbing and have to inspect hives, cover all supers with a cloth or a top cover/split board so that robber bees aren't attracted. Another way around this is to work the hives early in the morning or later in the afternoon when it starts to cool.

Tips for wintering down

Hives going into winter should cover nearly all the frames in a super as a minimum so they can have good thermal regulation. Weaker hives (those with fewer than six frames of bees) could be combined with another hive or perhaps could be placed on top separated by a split board so the heat from the bottom hive keeps the smaller top one warm. Four-frame nucs should be pushed together and stacked up, covered and tied so they help keep each other warm.

Hives need ventilation so there's a change of air in the hive each hour to expel water vapour given off by the bees. I have an entrance in my split boards of about 25 mm in length which, when used with the entrance down, provides top ventilation. A little bit more than the 25 mm by 8 mm ventilation I use can be achieved by putting a matchstick between the top super and the cover board (crown board) opposite the hive entrance (the highest point). You can check that you have enough ventilation by checking for condensation when it gets really cold. There should be a little bit of condensation around the edges of the

cover board (crown board) but nothing in the middle.

As I have said in previous articles, the actual size of hive you winter over bees in doesn't really matter (half-width frames, four-frame nucs, full-frame nucs, singles, etc.), provided there are enough bees in them to cover all frames. I hope to carry more nucs over this winter, as Ken Ring has predicted a wet patch in October just when I get my spring queens mated. Here in Wellington we have only a two-week window in October when the temperature reaches 20°C before the equinoctial winds start; otherwise I have to wait until mid-November to get queens mated.

Anybody removing the miticide strips put in during February should test to see that the treatment has been successful. If you don't want to lose bees by using a soapy solution to test for mite fall, use icing sugar, but repeat the sugar shake two or three times so that all the mites are removed off the 300 bees you sample.

Things to do this month

Winter down hives—some may need extra feeding. If you want to reduce the amount of sugar you have to feed them, reduce the hives to a single super and feed until at least six or seven frames are full of nectar. The only problem is that you will most probably have to start feeding the hives again in August to get them to full strength again before the main honey flow.

AFB inspection. This is very important at this time of the year after the robbing season has finished. Better to find AFB now instead of perhaps finding a hive dying out during winter and the neighbouring hives robbing it and spreading the disease.

Check the hives' foundation. It's a good time to change pallets and set up the hives so they have a slight slope forward so rain runs out of the hive.

Then *replace any supers that are showing signs of aging*; e.g., extra opening due to rot.

If the apiary is in a rural area, check the fencing. I've known cattle and horses to push over hives and eat the frames once the bees have chilled.

Check any stored honey supers for wax moth. Generally store them in an open shed where there is a good draft running over and under the supers, with queen excluders fitted top and bottom to prevent rodents making a nest in the frames. Put out rodent baits in a plastic bottle under a hive in the apiary to clean up any mice that are considering using your hive as a comfortable warm home. (Entrances should have already been reduced to 8 mm by 100 mm to prevent mice entering.)

Clear away grass in front of the hives. If the apiary is partially shaded during winter, consider placing a sloping board in front of the hive so that any bees that come in cold and land short of the entrance can walk in. Otherwise they tend to be lost, which can be a real problem if the bees fly a lot during winter.

And finally, *extract the last of the honey.*

RESEARCH

Exposure to neonicotinoids

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Reports from several beekeepers of apparent bee poisonings at the time of corn planting in Indiana in 2010 led us to investigate whether neonicotinoid seed treatments could be involved.

Samples were analyzed at the Connecticut Agricultural Experiment Station by LC-MS-MS optimized for pesticide analyses. Dead and dying bees from 5 hives in three apiaries had 3.4 to 7.6 ppb of clothianidin. Pollen collected in one day by the foragers of a colony showing poisoning symptoms had about 20 ppb of each of the two neonicotinoids (clothianidin and thiamethoxam) commonly used to treat corn kernels. No neonicotinoids were detected in bees or bee-collected pollen from a healthy hive in a nearby apiary that was not experiencing bee kill.

In a follow-up study, corn was planted in two fields with or without seed treatment and colonies were placed in and around them. Samples from bee-collected pollen in the treated field ranged from 0 to 88 ppb of clothianidin. Bee pollen in the adjacent untreated field ranged from 0 to 13.1 ppb clothianidin. Anthers from corn that had seed treatment had up to 3.9 ppb clothianidin. Anthers from untreated corn had 0.3 ppb. Soil samples taken from fields that had corn two years in a row contained 3.1 to 9.6 ppb clothianidin. Soil from a field that had been planted with untreated soybean seed in 2010 had 2.1 ppb clothianidin.

These results show there are multiple avenues by which bees can become exposed to corn neonicotinoid seed treatments and that the compounds are persistent in the soil. More acreage is planted in corn in the U.S. than any other crop. Given the high toxicity of neonicotinoid corn seed treatments, further study is needed to find ways to minimize risks to pollinators.

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Krupke, C., Eitzer, B., & Hunt, G. J. (2011). Potential routes of exposure of honey bees from neonicotinoid corn seed treatments. [*Abstract 16*, 2011 American Bee Research Conference, January 6–7, Galveston, TX]. *American Bee Journal*, May 2011, 507–518.

The permanent observation hive, part 2

By Jeff Murray, 115 Pearl Street, Cambridge, MA 02139, USA. Email: jnj.murray@verizon.net

Last month's article addressed thermoregulation and thermal homeostasis in cold weather.

This month, we will look at how thermal homeostasis plays out in hot and warm weather and in observation hives in cold and warm weather.

II. Hot weather

A. Standard strategies

As it gets warmer, and the temperature of cluster forming (57°F, or approximately 14°C) is reached and passed, the bees will still stay close together to ensure that the brood stays at a constant temperature of 33°C to 36°C (Morse, p. 471). Mathis and Tarpy (2007) found that "the upper limit for unaffected brood development is between 38°C and 39°C (100°F and 102°F)"; above that, the bees will adopt a series of countermeasures that are increasingly effective in cooling the hive.

There are at least three countermeasures that bees will take to counter a rising T(a). First, because bees generate heat simply by digesting honey, when the T(a) rises they will begin to move apart to dilute the effect of close assembly. When overheating threatens, they may, on their own, move out in great numbers in front of the hive and form a "beard". (Alternatively, the beekeeper can lower the T(h) by adding supers.) With any increase in temperature the bees will "start to fan their wings thereby cooling the hive interior through forced convection … If these measures prove inadequate, they will spread water, especially within the brood nest, for evaporative cooling." Therefore, "they can accomplish the extraordinary feat of maintaining a near constant brood nest temperature near 35°C (95°F) while outdoor temperatures … [can range] up to 50°C (122° F)" (Mathis & Tarpy, 2007).

Of these three countermeasures, the third one is the most effective. It is the one that is the least possible in an observation hive, so in discussing thermal homeostasis in warm weather for all hives the discussion will be confined to that.

B. The thermal homeostasis equation in warm weather

One equation that describes thermal homeostasis in warm weather can be

written as:

(NWD(SV) + VT) (T[h])= Thermal Homeostasis;

where

NWD = number of water deposits
VT = ventilation
SV = Spherical Volume and
T(h)= temperature inside the hive.

In this equation, NWD(SV) and VT vary directly with T(h). As T(h) increases in number, so too do NWD(SV) and VT.

There are similar implications that apply both to the water evaporation strategy to counter heat and to the cluster's heating and insulation efforts in dealing with the cold. Both strategies are based on the spherical form of the brood nest, but while the latter depends on the size and shape of the population, the former depends on the number of evaporation units, in the form of deposited droplets of water in the brood comb, and on sufficient fanning to produce evaporation.

As the colony must produce a critical mass of cooling effects to offset the increasing heat inside the hive, the T(h). Here again also, it seems that the size and shape of the brood nest come into play. In his book *The Wisdom of the Hive* (1995, p. 212), Seeley mentions that the cooling activity takes place especially in the brood nest, which we found to resemble a sphere. I suspect, without corroboration, that as in the case of the cluster, it may be that the cooling requirements are such that the area of water deposit may go beyond the parameters of the brood chamber. The same principle is involved here: to achieve a critical mass for the purpose of either heating or cooling. A larger population can occupy more than the brood chamber, if it is available, to meet the challenge. In cooling, a critical mass of evaporation sites encompassing more than the brood chamber can counter a rising temperature.

III. Small colonies

Tom Seeley's wonderful book *Honeybee Democracy* (Seeley 2010) was a revelation to me because, in it, he discusses small colonies. It was a way to think outside the 'Langstroth' box. Picking up where Martin Lindauer left off, he returned to the study of wild hives. In upper New York State, Seeley found and cut down numerous feral colonies that had settled in hollow sections of trees. He was surprised to find that their populations were smaller than those of commercial hives he had most often been dealing with. By carefully measuring the volume of these tree hollows, he realized that 40L was the preferred choice of the scout bees searching for a site.

Although Seeley concluded that the preference for a space with that volume is related to the need of the bees to accumulate enough honey to survive the winter, I believe that it is also related to the need of the bees to have sufficient room for the critical mass of population to form a spherical cluster of adequate size. For example there could, theoretically, be a 40 L cavity with the right amount of honey, and the right population, but if it was spread out very thinly over a long stretch, not allowing a spherical shape, the cluster could not maintain the right thermal homeostasis. For the same reason, in warm weather, if the bees were unable to concentrate the water deposits in a spherical brood area, the cooling effects would be diminished.

How, then, do these two thermal homeostasis equations affect the observation hive? In both cases observation hives, because of space limitations, are lacking in crucial variables needed for homeostasis. In cold weather they prevent the concentration of a sufficient population in the form of a sphere to generate the necessary heat. In hot weather, also because of space limitations, they preclude the concentration of a sufficiently large number of water deposits to cool the hive.

Normally, if left alone, such hives would not survive seasonal temperature extremes. However, the beekeeper has an option to offset these problems: intervening in the in-hive temperature T(h).

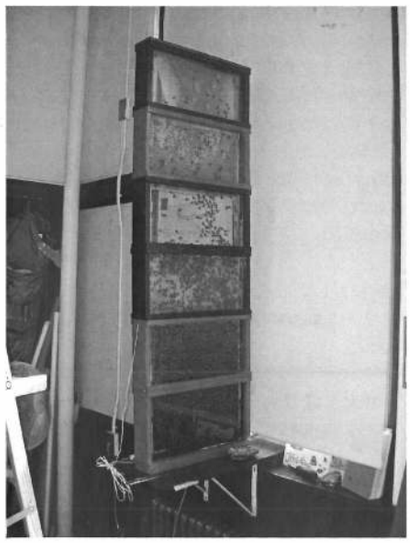
A. Observation hives homeostasis in cold weather

As we have seen, the equation for homeostasis in cold weather is:

Homeostasis = P (SV) +F/T(h)

> "...an observation hive is viable in cold weather even if the T(a) is very cold, as long as the beekeeper can sufficiently elevate the T(h)."

If P+SV and F are inversely proportional to T(h), then the higher the number for T(h) the smaller the sum of P(SV) and F need to be. Therefore, the more the beekeeper can intervene to raise T(h), the less important it is to the hive's survival to have a large population in a spherical cluster with a large food supply. And the less the need for a large, spherically clustered and well-fed population, the more viable an observation hive becomes. In other words, an observation hive is viable in cold weather even if the T(a) is very cold, as long as the beekeeper can sufficiently elevate the T(h).



This is as big as these hives get. The stabilizing structure has been removed. The entrance is hardly visible on the bottom.

I have found this to be true again and again. Year after year I have been able to winter over a very diminished hive, sometimes with a frame with one queen and just 200 bees. It had received all the outside cues. The queen stops laying, the bees that surround her live a long time (as evidenced by the very few bodies found on the bottom board), and brood rearing starts in late February to mid March. By June we usually have three, sometimes four, fully populated frames ready for the summer season.

B. Observation hives homeostasis in warm weather

In warm weather, the main danger for an observation hive is the colony absconding because of its inability to use the most efficient form of cooling: the third and last strategy, cooling by evaporation. In one instance in June 2004, without my being informed, contractors sanded the floor in the classroom where a hive was located. They left all the shades up in a south-facing room, while at the same time closing the bank of large windows and the door. The hive was in the full sun in a hot room. I do not know what temperature was reached, but when I returned the next day, all the bees were gone.

Besides this example, I have seen others that were less dramatic, but where, after the heating event, there were just a few bees left without a queen.

How does this play out with the formula? As we have seen, the equation for homeostasis in warm weather is:

Homeostasis = (NWD(SV) + VT) (T(h).

Since NWD(SV) + VT vary directly with T(h), the more T(h) is reduced, the smaller NWD(SV) +VT need to be, to the point where neither is necessary to maintain the required T(h) until they can take on a very limited shape or disappear altogether.

So, in the same way as in cold-weather homeostasis, if we modify the temperature of the hive, the T(h), we can achieve thermal homeostasis in hot weather. In warm weather, since the temperature varies directly with the cooling, the T(h) needs to be reduced.

In June 2009, Jenerra Williams, one of the teachers at the Mission Hill School in Boston, on a hot 80°F (27°C) day decided to aim a fan right at the brood nest of the observation hive in her classroom. This was a revelation to me. I realized that it was the way to modify the T(h) in an observation hive, by taking advantage of the natural conductivity of the glass to cool off the hive. One clear indication of success was that once the fan was on, the bees got closer together again on the frame to adjust and ensure the proper temperature for the brood.

This is the hive at the Mission Hill School with Amina Michel Lord, Jenerra Williams, the students and me.

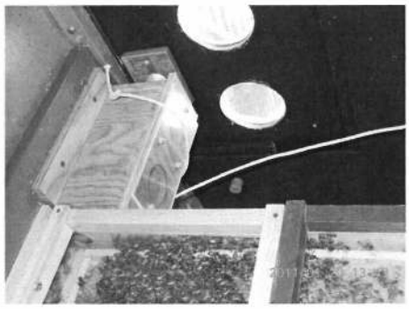
Sometimes, if we get to the hive after the temperature T(h) has risen beyond 100°F to 102°F (38°C to 39°C) and there is too much frenetic movement inside, we will spray water on the glass of the brood frames, thus replicating the bees' own technique by evaporating the water on the surface of the glass. The T(h) then drops dramatically and the bees slow down.

To summarize: if we modify T(h) by bringing down the temperature when we place a fan directly in front of the frame(s) with the brood, then NWD(SV) +VT do not need to be so extensive, and the size and shape of the cluster can be altered so as to be viable in an observation hive. While an observation hive is subject to the same stresses in hot weather as other hives, because the T(h) can be made much lower, the observation hive can still continue to function as a very small viable colony even if the volume of water deposits and the ventilation have been greatly reduced. →

IV. Conclusion. The observation hive as a permanent colony.

Thermoregulation affects the architecture of honeybee colonies. My own understanding of that fact enabled me to explain how, contrary to usual practice, my observation hives could last as long as they did.

It is true that we (the teachers I work with, and my friends) have not worked out all the details. In many respects, the way we use this technique is a bit like hammering a tack with a sledgehammer. For example, we do not know how much insulation to use. If a room is maintained at a constant temperature of 72°F (22.3°C), even with the cold, outside air coming in through the tube, do we need any insulation at all?



This is a close-up of the tube going to the outside, with a protective, see-through box over it. Photos supplied by Jeff Murray.

In all our locations the room was not heated or was heated only during the day. Then again, we faced situations where the hive had to be set over a radiator and in fact was overheated in the middle of the winter. Were we maintaining the hive at a continuous in-hive temperature T(h) by using the insulation as a way to keep out the heat of the room, instead of insulating it from the cold? Alternatively, in warm weather, could it be that by constant cooling of the hive, we interfered with the collection and storing of nectar and pollen?

These are questions for further study. Right now, we have only a partial answer, but one which is just enough to achieve the goal of maintaining a small colony alive through temperature extremes.

By carefully controlling the T(h), a beekeeper can maintain an observation hive as a perfectly viable colony. It is true that managing one involves somewhat different tasks than a regular Langstroth hive, but these tasks are different, not more complicated. Although I have started and maintained many over the years using the principles of thermoregulation, scientific practice requires replication: that is, that others perform the same experiment separately to see if the same results occur.

I wrote a "how to" article on the subject of observation hives in the American Bee Journal in November 2009 (Murray ABJ, 2009, p. 1075) in which I made many recommendations, among them a method to add or take off the glass 'supers' without getting a single bee in the room, which makes it safe to use in a class or at home.

Incidentally, I note that in the 30 years that I have managed observation hives, I have always kept them in a lighted room, either from a window or artificial light from a bulb, always shielding them from direct sunlight. I have never seen any evidence that exposure to light stops the hive from functioning normally. It is true that bees are extremely phototropic, and that if you suddenly raise a window shade they will all, in one collective movement, move towards the source of light. But, after a while, once the source is a constant part of their environment, they will soon resume normal behavior.

In closing, even though we occasionally interfere with the hive by feeding, insulating, or cooling it, an observation hive is the closest we will ever get to see---in such great detail, and so continuously---a wild animal functioning in its natural environment. When, long ago, I first saw the bees dancing before my eyes in the Observation Hive of the Boston Museum of Science, it was so extraordinary to me that I wanted to find a way to make that experience available, everyday, to my children. I went about building one and putting it in my home. As the years went by, I came to realize that everyone would benefit if they simply had the opportunity to witness, in a familiar setting, one of Nature's great dramas, one that we are so seldom allowed to see. Starting and maintaining many small colonies is in itself a worthwhile pursuit when we are losing so many hives to so many different threats.

Now that you know that an observation hive can be viable year-round, why not set up one of your own? If anyone in New Zealand wants to replicate our experience, we are in the process of setting up a website: classroomhives.com that will have a lot of concrete information. We use a prefabricated observation hive from the Kelley Company of Clarkson, Kentucky, but instead of having to import an expensive item from abroad, it might make more sense to have someone from New Zealand make the same kind of hive on location. It is simply several boxes with 1/8-inch glass on each side, deep Langstroth frames, with the appropriate bee space, and a clear one-inch I.D. (interior diameter) tube leading to the outside.

I would welcome any requests for information on how to set up one of these hives. I can be reached at: jnj.murray@verizon.net.

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Working with bees is always a reminder that it is the collective effort that makes things work. I would like to mention my collaborators: Jenerra Williams for having been willing to take on this unchartered project for 10 years; Amina Michel Lord for her many contributions: documenting in the school newspaper the hive's activities and facilitating the work around it; Benadette Manning and Michele Goe for their work in making the hives officially a reality to the Boston School Administration; Benadette again for teaching me through her Trigonometry class, the mathematical issues relating to the hive; Noah Wilson-Rich for our many conversations about apiculture and his sound advice; and Dave Slaney, Lesley Cohen, Nancy Fithian and Stefan Economou, my editors, who had so much to do with making this article readable and clear.

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For more information or product samples please contact us at:

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sales@pharmapac.co.nz

* The closure colours shown above are all stock colours (applies to 57mm & 60mm calosures), for your own custom colours a minimum orders of 5000 units will apply.

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