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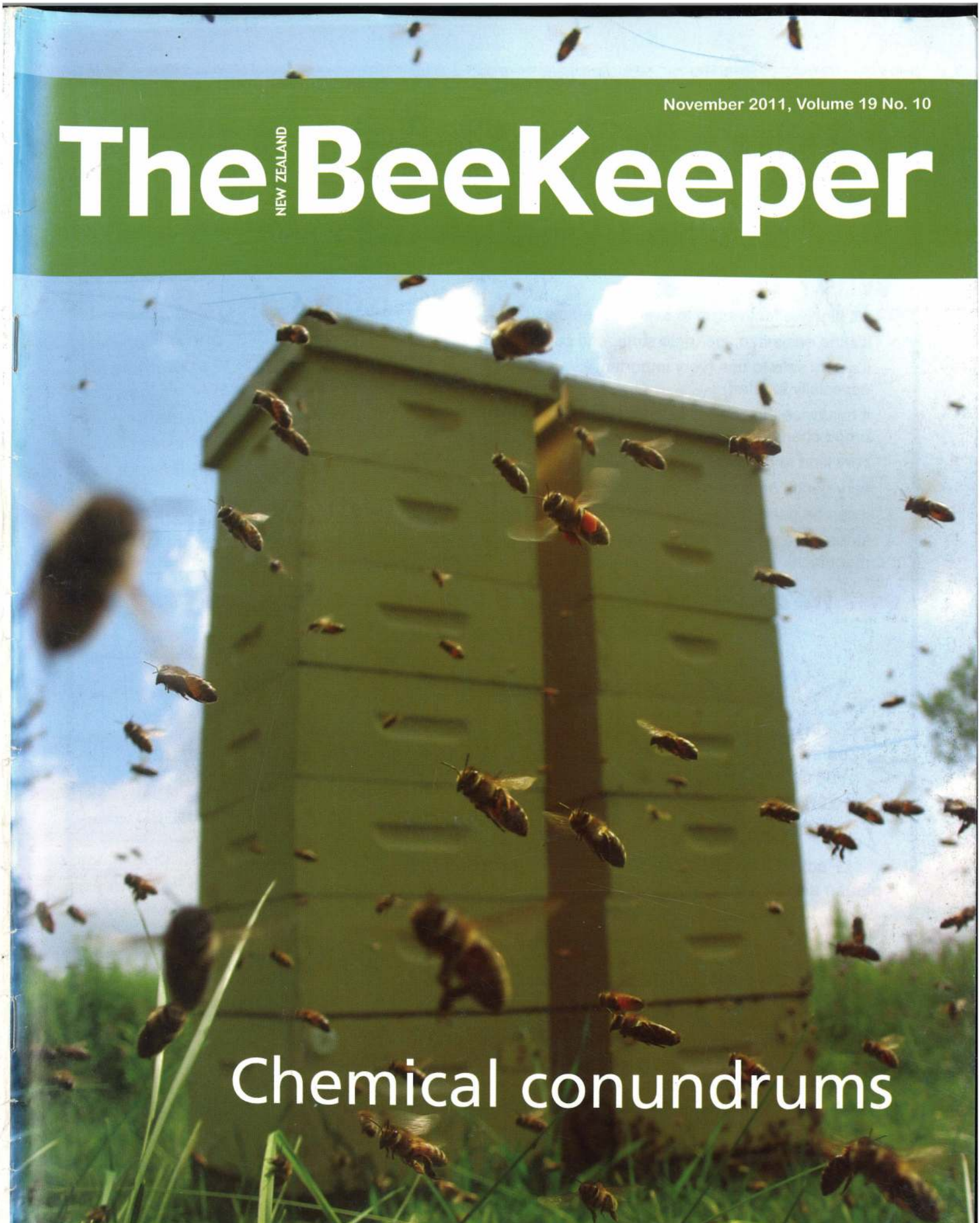
The NEW ZEALAND BeeKeeper



Chemical conundrums

- DWV and other security risks
- Diagnosing AFB • Varroa resistance in Canada

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Front cover: Photo taken by Ontario Provincial Apiarist Paul Kozak at the jointly managed beeyard of the University of Guelph and the Ontario Beekeepers Association Tech Transfer Team. The yard is managed with organic methods as a demonstration project.

Chemical conundrums

By Barry Foster, NBA President

Each year beekeepers go into pollination of various crops with some trepidation as they face the spectre of hive losses through chemical misuse or spray drift.

The kiwifruit pollination season and pollination of other crops are in full swing or gearing up to it, depending on location. I felt it timely to do some research into the options a beekeeper might face in the event of finding some hives dead or weakened by 'chemical trespass', which is the legal term used.

Since early this year Parliament's Local Government and Environment Committee has been gathering testimony from a number of organisations, including the NBA, on the question of ensuring future pollination security in New Zealand. The select committee wants to determine how we might avoid the large-scale colony losses found in Northern Hemisphere countries and by doing so, to help prevent a huge loss to New Zealand's economy should we suffer a sudden drop in available honey bees for pollination.

In our testimony we concluded:

> *'New Zealand is at risk for sudden large scale losses because the suite of contributing factors observed overseas that have caused epidemics like the types of colony losses observed overseas are also operating here such as the long term impact of Varroa, accelerating increase in the load of pests and diseases, increasing loads of toxic exposures particularly from systemics, loss of flowers and poor bee nutrition, and compromised habitats.'*

In early October the new Environmental Protection Authority (EPA, formerly ERMA) testified. One question originating from our testimony was whether the HSNO Act 1996 works in practice in the case of chemical trespass. The EPA replied that it administers the law and contracts out the practical running of it to the Department of Labour.

DoL further contracts out the application of the HSNO Act to local territorial authorities throughout New Zealand and other lead agencies that deal with particular areas of expertise; e.g., land transport, maritime or civil aviation. It is left to various regional councils or territorial authorities to enforce compliance with the Act with respect to hazardous substances on farms.

A few phone calls to some territorial authorities in major horticultural regions and the DoL in Wellington confirmed to me that:

1. compliance, let alone enforcement of the HSNO Act 1996, is under-resourced by central Government
2. it lacks training of officers charged with compliance of the Act
3. it nationally lacks a sound process of gaining evidence in cases of chemical trespass.

> "Remember, an ounce of education beats a ton of enforcement."

Many councils and territorial authorities therefore consider this to be a non-priority area; consequently those affected by chemical trespass have been unable to gain any effective remedies through the courts.

Compounding this situation is that the burden of proof is very high, leading in some cases to authorities adopting an infringement fee policy. In these cases the resulting fine often is not very high: certainly not near to the damage often caused, let alone covering costs. Various cases in the past have been settled out of court, usually with attached non-disclosure clauses. Two cases of misuse involving considerable risk to pollinating insects have succeeded through misuse of a chemical. None to my knowledge have resulted in a remedy being awarded by the court to a beekeeper suffering loss from chemical trespass.

Some authorities appear to do a good job; e.g., the Hastings District Council's pollution hotline has collected chemical trespass evidence in the past. But again the burden of proof is too high to prove in court as to cause and effect in regard to bee losses.

Accordingly, my best advice is that beekeepers contact their local territorial authority or district council to ascertain:

- whether there is any process in gaining evidence in cases of chemical trespass or misuse
- who are the trained people they might contact in such an event
- the details of the local air quality plan.

Remember, an ounce of education beats a ton of enforcement. Lobbying helps, as would notification to other beekeepers in the affected area, your branch and the NBA executive through your ward member.

The other alternative is to say nothing and take what might be annual losses on the chin and in the pocket or move out. I suspect that this is more common than many beekeepers would feel comfortable talking about, let alone put in writing. The only difficulty with this approach is that the trend of poisonings might be increasing around the country. We don't know, and the NBA cannot do anything about what it does not know. It also may be a trend that could be just one of the contributing factors in sudden large-scale losses of honey bees in the future: the very thing we wish to avoid.

I wish you all a successful season.

GIA, governance and strategy development

By the NBA Secretariat

By now you will have seen the full GIA consultation document, which has taken some time to complete.

It remains a work in progress and we will continue to update the industry.

Daniel and Pauline recently attended an industry leaders' forum hosted by Federated Farmers. The Director-General of MAF, Wayne McNee, attended and provided an overview of the new MAF strategy and structure. He expressed a preference for working in partnership with industry. This meeting was also a significant opportunity for industry to see the extent to which we could create common, industry-wide feedback to MAF on the GIA. A common view was presented to MAF on things that industry felt needed changing in terms of GIA. A working group was established to undertake the development of key principles discussed at the meeting for a position paper that is to be presented to MAF.

Governance and liaison

The Executive Council training day was held in August and resulted in a seismic shift from old perceptions of what governance entailed. As a result, Executive Council meetings have been restructured. A list of priority issues for the Association has been clearly identified and timetabled for action by the Executive; for example, a rewrite of the Association's policies, a review of the constitution, risk management and induction training for new Executive Council members.

Daniel and Pauline joined the BPSC's meeting in September for an update from MAF on their SmartGate initiative and other biosecurity issues. SmartGate is a biometric passport control system that enables people to move through the border more quickly. The NBA elected two new representatives to the BPSC after Jane Lorimer stood down due to family commitments. David McMillan and Fiona O'Brien are the new representatives with Philip Cropp, who remains for a further year.

The issue of the use of streptomycin sprays on kiwifruit has been uppermost over the last few weeks with liaison with industry, responses to KVH, discussions with ACVM and a number of media interviews and media releases.

Daniel and Pauline attended a third Local Government and Environment select committee hearing on Pollinator Security with Dr Mark Goodwin appearing to answer the committee's questions. The committee is well informed as a result of the NBA and MAF's appearance at two previous hearings and they raised some very relevant questions of Mark regarding his views on the major threats facing the industry today. In late September a fourth hearing was held, with EPA and MAF invited to answer questions.

A brief excerpt from this hearing appears elsewhere in this issue of the journal, with a full transcript available in the members' section of the NBA website. Daniel and Pauline will be meeting with some of the more influential committee members to further discussions and provide them with more information.

Strategy document to strengthen the NBA

As a result of members' calls to strengthen the NBA, a strategy document has been drafted to help create and support a wider operating environment (regulatory, legislative, policy, public opinion) in which all members' business interests can flourish in a responsible, ethical and sustainable fashion. The Executive wishes to complete a review of the draft plan. Once they are satisfied the plan meets the brief given by the members at the AGM to strengthen the NBA, they will circulate it for discussion and comment.

Publications

The *Starting with Bees* booklet has undergone a revamp and is currently being reprinted. Many hours have gone into the new design, proofing, sourcing advertisers, and liaising with printers, AsureQuality, NZFSA and the AFB NPMS Management Agency. We think you will be very pleased with the 'new look'.

Sales of books in 2011 have been very high, necessitating a reprint of *The Elimination of American foulbrood without the use of drugs.* Book prices, which have remained the same for some years now, have been increased to cover the increases in costs.

Memberships

The membership and subscription forms for 2012 have been updated and circulated via the October journal and an email and postal mailout. Renewals are already coming in, which is pleasing. If you require a membership renewal form for 2012, contact secretary@nba.org.nz

Various industry partners have been approached with a view to offering membership benefits to the NBA for 2012.

Research

The research committee's application for a funding extension for the sustainable control of varroa has been approved with Daniel and Pauline as the project managers.

So as you can see, it's been a busy time recently and we anticipate more of the same as we continue to work through the GIA consultation process and develop the draft plan for the Association.

See you in the next issue of the journal.

Regards
Daniel, Pauline and Jess

Errata

In the October issue, the articles 'Research for NZ bees (page 47)' and 'Direction sought on future bee research' (page 49) were inadvertently omitted from the Table of Contents. We apologise for the oversight.

Deformed wing virus and other security risks

What follows is an excerpt from the corrected transcript of testimony by Dr Mark Goodwin to Parliament's Local Government and Environment Committee, 8 September 2011. Dr Goodwin and Daniel Paul were invited to provide a briefing on pollinator security.

Members
Chris Auchinvole (Chairperson), Brendon Burns, Jacqui Dean, Sue Kedgley, Eric Roy, Hon Heather Roy, Kanwaljit Singh Bakshi, Phil Twyford, Louise Upston, Nicky Wagner

Witnesses
Dr Mark Goodwin, Scientist, Plant and Food Research *[and]* Daniel Paul, Joint Chief Executive Officer, National Beekeepers' Association of New Zealand

Kedgley: Just two questions: this deformed wing virus. I was sort of alarmed that an actual risk assessment was taking place which said it cannot come in semen, as a result of which we imported the semen, and then it turned out to be completely wrong. I mean, that sort of rings alarm bells, and you think, could some of these other risk assessments be completely wrong. Could it be, for example, that Australian honey could be imported and it could be a serious risk even though MAF is saying that it couldn't be? So that is my first question. My second one is: [~~if~~] varroa, if we are already seeing resistance to the miticides that are used to treat varroa, where do we go next? I mean, what happens if they've got resistance to these treatments?

Goodwin: I'll attempt to answer the first question first. I'm sure you're aware of how risk assessments are done and import health standards are done by the ministry of agriculture and fisheries. They use a different system to what ERMA does when it's importing new organisms into the country. MAF doesn't have to use the falsifiable principle—sorry, if I can get the right word here—the precautionary principle, sorry. So if they don't know something—

Auchinvole: Then it's fine.

Goodwin: It's fine, and because there were no reports of deformed wing virus in semen, which is translated as no one's ever looked, the assumption was made that it couldn't be—it wasn't there. That's the general way that most of these risk assessments are done. If you don't have the information, then you can assume that it doesn't happen. ERMA works under a different principle: if you don't have the information, you better go and get it.

Auchinvole: Or you do a test.

Goodwin: Yeah, that's right, you go to find the information or they're not going to sign anything off for you. So there is a difference in the way that we handle in the different agencies the same issue. With the deformed wing virus, that's why we ended up in that situation.

Kedgley: So could there be a risk with Australian honey, for example? Israeli acute paralytic virus, etc?

Goodwin: Yes, there's currently two issues with Australian honey. One is European foulbrood, which is a bacterial disease that's spread in honey, and the other one is Israeli acute paralysis virus, which we don't currently know how it is spread. But you will be aware there have been changes to the Biosecurity Act and hazardous substances and noxious organisms Act 2 years ago now, I think it was. As part of that change—it resulted in two things. We now have two sets of rules for importing new organisms—one that uses the precautionary principle, which is ERMA, and one that doesn't, which is MAF, which is an interesting situation.

Part of that process, I think because the beekeeping industry had won their battle in court over the risk assessment, they were given—there was another change that if there was significant opposition to a risk assessment, it had to go to independent review. For the honey one, it did go to independent review. The independent review was a scientist from overseas and two ex-public servants from New Zealand, which is interesting. The net result was they agreed with the bee-keeping industry about the risks and the need to be done. MAF has gone back and done the research necessary—or is in the process of doing so. One, to do a lot of hunting in New Zealand to see if the diseases are already here, secondly to look to see if there are safe ways we can bring ED *[honey]* in, and currently they're funding a project, in England I think it is, to see whether heat treatment will eradicate Israeli acute paralysis virus from honey.

Auchinvole: With Australian honey they have to boil it, don't they?

Goodwin: Sorry?

Auchinvole: Australian honey has to be boiled or something?

Goodwin: It has to be heated before it is introduced. At the moment if it comes in, it would be to kill European foulbrood. We don't know the conditions yet that would be required to kill Israeli acute paralysis virus.

Auchinvole: Could be freezing it or something?

Goodwin: Yes.

Wagner: Or eating it before it gets here.

Goodwin: Yes. I kind of hope with all this effort that somebody actually wants to export honey from Australia to New Zealand.

[Editor's note: Material in brackets has been added for clarity. A copy of the full transcript of this hearing is available in the 'members only' section of the NBA website. The hearings held 11 May and 9 June are also available as audio downloads. A transcript for the final hearing with EPA held 28 September will be available shortly.]

Resistant varroa 10 years on in Canada

By Dr Oksana Borowik

Beekeepers in Ontario, Canada, have had a tough winter and it has nothing to do with weeks of subzero temperatures or 'marauding black bears'.

Colony losses amongst commercial beekeepers in the province averaged 42% for the 2010/2011 winter, following four years of winter losses averaging 35%. Beekeeper Brian Rowaan of Niagara-On-The-Lake, Ontario, lost 50% of his 3500 hives last year and is now looking with some trepidation as winter approaches again.

Across the border in the United States, similarly large losses have been associated with Colony Collapse Disorder (CCD). However, even though varroa, *Nosema ceranae* and the Israeli Acute Paralysis Virus (IAPV) are present in Ontario and have all been linked with CCD, the symptoms of the losses in Canada appear to be different. The symptoms are lots of dead bees in boxes with good feed resources. The colonies are not abandoned as has been reported as CCD in the US.

What is killing hives in such high numbers in Ontario?

This winter I had the opportunity to attend a meeting of the Ontario Beekeepers' Association (OBA) and to meet with the Ontario Provincial Apiarist Paul Kozak, Les Eccles of the OBA Technology Transfer Team, and researchers Dr. Ernesto Guzman and Paul Kelly of the University of Guelph. This team is working together on beekeeping issues and with resistant varroa recently reported in New Zealand, as well as the confirmed presence of *Nosema ceranae*, their research may be of special interest to New Zealand beekeepers.

Dr. Oksana Borowik is welcomed to the OBA meeting by OBA president John Van Alten.

With no clear explanation for the dramatic losses in Ontario, Dr. Ernesto Guzman, Paul Kelly and Les Eccles set out to identify the main culprit. Specifically they looked at the effects of varroa and tracheal mite infestation (note: tracheal mites are not found in New Zealand), low food reserves, low bee population and *Nosema ceranae* and *Nosema apis*, in 408 commercially managed honey bee colonies.

University of Guelph, Honey Bee Research Centre researchers Dr. Ernesto Guzman (far left) and Paul Kelly (far right).

They concluded that 85% of the losses were due to high infestations of varroa mites (Guzman et al. 2010). Of the colonies that survived winter, high varroa levels and nosema infection significantly restricted colony growth in the spring. Dr Guzman states in another co-authored paper that the *"direct and indirect effects associated with acaricide resistance and the failure to control V. destructor mites are believed to be the most important factors related to colony loss in Canada"* (Currie et al. 2010).

This conclusion is echoed by international researchers: *"The lack of effective miticides to control Varroa lets the mite populations grow to injurious levels, triggering colony collapse directly by the number of mites per bee or indirectly by decreasing bee immunity and favoring virus multiplication"* (Le Conte et al. 2010).

Varroa was first detected in Ontario in 1989 and then the first resistant varroa were identified in 2001. Dr Guzman has spent the past six years testing 24 different natural products as an alternative to the failing acaricides. These have included fungi and essential oils such as menthol, clove, oregano, and thyme. Currently in Ontario, only thymol, formic acid, oxalic acid and the acaricides Apivar® and Apistan® are registered for varroa treatment.

Recent research shows that varroa suppresses the immune system in honey bees and makes them more susceptible to viruses. Dr Guzman is now focusing on this aspect, experimenting in Ontario and Mexico on European and Africanised bees respectively. Africanised honey bees are more resistant to diseases and parasites than European honey bees and could identify ways to control bee diseases through natural defenses. Dr Guzman is also testing different substances as potential "immune activators", which might boost the immune system of bees such that they can better defend themselves against pathogens.

So what has Brian Rowaan learned from his 50% colony loss this year? *"I've had problems with treating too late in the season because I was not willing to sacrifice honey production ... a big mistake."* How late were his treatments? Two weeks.

Brian bought 1400 packages of bees from New Zealand to replace his losses. Live bee exports from New Zealand to Canada are now at a record 34,000 packages per year, up 13% on last year. The export of →

queen bees to Canada increased from 3000 in 2008/2009 to 7000 in 2009/2010 (MAF, 2010).

Beekeepers in Ontario have recently noticed that queens are failing much earlier than in the past. To help address this question, Les Eccles and the OBA Technology Transfer Team have secured NZ$300,000 in Canadian government funding for a two-year study aimed at improving the health, fertility and virus resistance of honey bee queens. Viruses, says Les, are the new frontier of bee research.

Les Eccles of the OBA Tech Transfer Team at the OBA meeting workshop.

This is good news for beekeepers as scientists develop new molecular technologies to identify previously undetected viruses and learn how to fight them. Already this year, international researchers have identified four new honey bee viruses: Lake Sinai virus strain 1 (LSV1), Lake Sinai virus strain 2 (LSV2), aphid lethal paralysis virus strain Brookings (ALP-Br), and Big Sioux River virus (BSRV) (Runckel et al., 2011). Surprisingly, two of the newly identified viruses were the most prevalent viral components in honey bees.

In conclusion, progress is being made in the fight against resistant varroa and I plan to continue monitoring this Ontario research.

Cut and ready: OBA Tech Transfer Team testing hives for hygienic behaviour as part of their queen breeding programme. All photos courtesy of the Ontario Beekeepers' Association Tech Transfer Team.

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Organic honey processing and storage

By Dr Dinko Dinkov, Department of Hygiene, Technology and Control of Animal Foodstuffs, Veterinary Legislation and Management Trakia University, 6 000 Stara Zagora, Bulgaria. E-mail: dinkodinkov@yahoo.com

Quality organic honey in all cases must be clean from pollution, with the specific for honey type and close to natural quality parameters.

At present, organic bee honey requires a high quality of physical-chemical parameters and an absence of contaminants (Bogdanov, 1997; Bogdanov, S., 2006).

In available world official guidelines for organic production of bee honey (European Union Council Regulation on organic beekeeping, 1999; USA N.O.S.B. standard draft for organic beekeeping, 2008; New Zealand technical rules for organic beekeeping, 2001; Canadian Organic Honey Standards, 2008), we found a lack of specific information. The European regulation (European Union Council Regulation on organic beekeeping, 1999) indicated only particular requirements related to:"7. Husbandry management practices and identification (p. 5); 7.7. Particular care shall be taken to ensure adequate extraction, processing and storage of beekeeping products. All the measures to comply with these requirements shall be recorded; 7.8. The removals of the supers and the honey extraction operations must be entered in the register of the apiary".

In certification documents from the USA (USA N.O.S.B. standard draft for organic beekeeping, 2008), we found more information related to organic production or handling system plan that included:"(1) A description of practices and procedures to be performed and maintained, including the frequency with which they will be performed; (2) A list of each substance to be used as a production or handling input, indicating its composition, source, location(s) where it will be used, and documentation of commercial availability, as applicable; (3) A description of the monitoring practices and procedures to be performed and maintained, including the frequency with which they will be performed, to verify that the plan is effectively implemented; (4) A description of the recordkeeping system implemented to comply with the requirements established in § 205.103; (5) A description of the management practices and physical barriers established to prevent commingling of organic and nonorganic products on a split operation and to prevent contact of organic production and handling operations and products with prohibited substances; (6) Additional information deemed necessary by the certifying agent to evaluate compliance with the regulations".

"Despite more requirements in standards, we found a lack of specific information relating to organic production of bee honey."

In New Zealand (New Zealand technical rules for organic beekeeping. 2001), and Canadian (Canadian Organic Honey Standards, 2008) regulations, we also found more information but also not enough to completely clarify questions about identification, processing methods and storage for organically produced bee honey. For example, the Canadian standard (Canadian Organic Honey Standards, 2008), has some requirements for Extraction, Processing and storage for organic bee honey:"7.1.15.1 Extraction of honey from a brood comb with a live brood is prohibited; 7.1.15.2 The operator shall preserve and protect the quality and organic integrity of the honey, produced in accordance with this standard, once it is harvested.; 7.1.15.3 Surfaces in direct contact with honey shall be constructed of food-grade materials or coated with beeswax.; 7.1.15.4 The heating of honey for extraction shall not exceed 35°C, and the decrystallization temperature shall not exceed 47°C.; 7.1.15.6 Honey shall be packaged in airtight containers".

At the moment, beekeepers all over the world discuss problems with certification of organically produced honey and ask similar questions: "Are existing in-the-moment regulations suitable for organic beekeeping?" "Is the harmonisation of regulations desirable and necessary?". These questions must be addressed first to scientists and the answers could help beekeepers towards an efficient and satisfactory ecological beekeeping practice.

Despite more requirements in standards, we found a lack of specific information relating to organic production of bee honey. Thus the aim of the study is, by comparison with available references, to propose specific requirements for processing methods and period of storage for organically produced bee honey.

Proposals for processing and storage of organic honey

From available requirements, types of organic bee honey could be: "comb honey: Honey presented in its original comb or portions thereof; extracted honey: honey removed from the comb and presented in several forms, as defined in the United States Department of Agriculture Standards for Grades: (1) liquid, (2) crystallized or granulated, or (3) partially crystallized" (USA N.O.S.B. standard draft for organic beekeeping, 2008).

Required also: "Commercially Raw Honey: Honey as obtained by minimum processing. This product is often labeled as raw honey; Strained Honey: Honey which has been passed through a mesh material to remove particulate material (pieces of wax, propolis, other defects), without removing pollen" (8a and 10 from NOSB Apiculture Task Force Report Organic Apiculture Standards, 2001). →

GM plants and pollens near organic apiaries may contain genes, which provide resistance to commonly used antibiotics such as ampicillin (Genetically Modified Crops Threaten bees. Available at http://santostrading.com.au/articles/bees.html). In respect of the possibility for contamination of GM pollens, the NOSB Apiculture Task Force Report Organic Apiculture Standards, (2001) required that: "(g) The producer of an organic apiculture operation must not: (1) Maintain colonies in an area where a significant risk of contamination by prohibited materials exist within a 4 mile (6.4 kilometers) radius of the apiary, as described in the operation's organic apiculture plan".

Processors of organically produced bee honey should adhere to specifications for good apicultural praxis for harvesting honey with optimal quality (Bogdanov, 2010): "use of only prescribed bee drugs; no use of antibiotics, chemical drugs for the control of the wax moth or chemical repellants; no feeding of sugar until at least 1 month before the honey flow; no use of excessive smoke; no harvesting of brood combs or honey combs containing brood; harvest when most of the combs are capped; honey water content is as low as possible: lower than 20%, if possible, lower than 18%; place for honey centrifugation is clean; fresh and clean water is present; all instruments, which are in contact with the honey are clean; mesh size of honey sieves not greater than 0.2 mm".

Storage or exposure to either ambient (environmental) or applied (deliberately added) heat influences the character of honey (NOSB Apiculture Task Force Report Organic Apiculture Standards October 16, 2001). Consumers often do not prefer organic honeys with crystallization. This inevitably affects for marketing and selling of these honeys. For this reason producers often liquefied crystallized honeys by different conditions: heating at higher temperatures by water bath and other methods for heating as well as wave applications (ultrasonic waves, microwave and infrared oven). On the other hand, it was well known that prolonged storage with high temperatures at 50°C results also in a decrease of aroma compounds in honey. Honey quality decreases with increasing temperature: the HMF content increases, while the enzyme activity decreases (White, J. W., 1975). Similar temperatures use to use from beekeepers and factories for liquefied of crystallized honeys (Wooton et al., 1978). From these reasons in Canadian Organic Honey Standards (2008), required: "7.1.15.4 The heating of honey for extraction shall not exceed 35°C, and the decrystallization temperature shall not exceed 47°C".

In addition, it is well known that enzymatic activity, antimicrobial properties, microbial quality, color and chemical composition are all influenced by heat and storage (White, 1992). New scientific data was also found for decreasing of activity of enzyme invertase under low temperatures fewer than 40°C (Dinkov, 2010).

Honey can be stored for longer periods of time, if stored under optimum conditions. This product is very hygroscopic and should be thus stored in airtight containers to prevent damage due to odors and humidity. Optimum temperature is 10–16°C. The relative humidity of the storage rooms should be less than 65% (Bogdanov, 2010).

Aroma is an important quality factor for foods, especially for organic bee honey. The aroma of bee honey depends on volatile fraction composition, which is influenced by nectar composition and floral origin. Aroma compounds are present in honey at very low concentrations as complex mixtures of volatile components of different functionality and relatively low molecular weight. Honey of unifloral origin usually commands higher commercial value; thus the floral determination and certification of unifloral honey plays an important role in quality control. Since gas chromatography/mass spectrometry (GC/MS) combines high separation efficiency and sensitivity and provides qualitative and quantitative data for these compounds, it is usually the technique of choice for aroma profile determination (Cuevas-Glory et al., 2007).

Because of the use of additional temperatures and mechanical influences for decrystallization of stored organic honeys, this inevitably leads to decreasing of aromatic components. This conclusion recalls a reference from 2008 (Castro-Vázquez et al., 2008). In this study, a fresh citrus honey was stored at 10, 20, and 40°C for 12 months. It was found that volatile compounds (especially terpenes and terpene derivatives), monosaccharides, and disaccharides presented important losses during honey storage at any temperature. Honey storage at 10 or 20°C maintained their floral, fresh, citric, and fresh fruit aroma, while the intensities of these attributes were diminished.

Conclusions

Proposals for processing of organic bee honey: prohibition of heating above 37°C under processing; second processing after originally processing from beekeeper with heating up to 37°C (Castro-Vázquez et al., 2008; Dinkov, 2010).

Proposals for conditions and period of storage for organically produced bee honey: storage conditions: below 20°C (optimum temperature is 10–16°C) and the relative humidity should be less than 65% (Bogdanov, 2010); period ("Best before"), up to 2 years from packaging (not treated Commercially Raw and Strained organic honeys), or period ("Best before"), up to 1 year from packaging (Commercially Raw and Strained organic honeys treated only at temperatures up to 37°C), (White, J. W., 1975).

References

Available on request from the author.

We're sorry!

Apologies for the late arrival of the October issue. It was the largest journal we've yet produced, and is a challenging logistical task. It also illustrates the importance of getting contributions in on time. We regret any inconvenience to advertisers, journal contributors and readers.

Committee reports on Conference

By Helen Sinnock, on behalf of the Conference Committee

Now that we've had time to catch our breath, it is time to assess our experience of the NBA Conference 2011 at Waipuna Conference Centre in Auckland.

The conference committee, led by Ian Browning, were very grateful for the input from those members who had had previous experience of conference organisation, without whom the greenhorns among us would have been really struggling.

First of all, I think we have to agree that the venue was excellent. From an organiser's point of view, the venue staff were excellent to deal with, the facilities were of a very high standard, and the catering was great. We have had many favourable comments about the comfort and convenience of the auditorium, and the availability of suitably sized rooms for the various meetings and displays throughout the Conference.

Thanks go to Maureen Maxwell for her input into the menus and general meal arrangements. It was also very convenient to have accommodation on site for those from far afield. Graham Cammell took on the responsibility of being the 'go-to' person for the duration of the Conference, and ensured that the whole programme ran smoothly. Our thanks to Neil Stuckey for taking on the job of MC.

Kim Kneijber and Carol Downer are to be congratulated on running a very successful Small Beekeepers' Forum, which attracted over 180 interested amateurs. Details have been amply covered in a previous edition of the journal.

We must record a huge thank you to the sponsors, without whose support the conference would not have been possible. There was a large range of products and services on display, from forklifts and trucks to cell cups, and all manner of useful aids to beekeeping in between. And who could forget those delicious little chocolate cupcakes provided by the girls from Comag? Bob Russell did a tremendous job in taking care of the sponsors, and Trevor Cullen was responsible for making sure that the booths were set up (and dismantled) in good time.

The speakers are always a vital part of any conference, and those who gave presentations were of a high calibre and covered an impressive range of topics. It was great to have Gilles Ratia, the President of Apimondia, with us to share his great breadth of knowledge and experience, and our American speakers, Randy Oliver and Blake Shook (whose accommodation and travel were sponsored by AGMARDT) were great value. I think it is true to say that Randy's message about life with varroa was a great morale booster to those struggling with the little pests, and Blake had much useful information to offer.

We must not forget our local Kiwi speakers, who covered a great range of topics. These included David Boldt, who spoke about the vexed question of honey imports, and Linda Newstrom-Lloyd, whose work on pollen sources is of great value to the industry. There were 21 speakers altogether—too many to mention individually here, but all did us proud and were very worthwhile.

There was the usual mix 'n' mingle evening, with the not-so-usual Queen and Disreputable Drone competition, and the usual Conference dinner (sorry about the too-loud music, folks!). The very generous donation of goods for the Charity Auction meant that the auction went on a little too long. However, the upside of that is that we are able to donate over $11,000 to CanTeen.

The photo competition had a stunning display of photos (I'm glad I didn't have to judge the winners), and the honey competition entries were, in my view, absolutely beautiful. The Roy Paterson Trophy produced some very interesting entries, and it is clear that the inventive streak is alive and well in the beekeeping fraternity.

Of course, a conference is not a conference if nobody bothers to come, and we had a great turnout of very appreciative attendees. Thank you to all those who came, and made all the hard work worthwhile. If you didn't come along this year, mark your calendar now so you don't miss out on a great event next year in Hawke's Bay. To the next conference committee, we say, "It's hard, time-consuming work, but when you see smiles on the faces of the attendees, it makes it all worthwhile. Good luck for next year."

Trees for Bees at Farm Forestry regional workshops

A new three-year programme of 25 regionally based workshops is being launched this month, funded by the Sustainable Farming Fund and supported by the New Zealand Farm Forestry Association. The workshops are aimed at pastoral farmers and their advisors to identify the economic and environmental benefits of planting trees on their properties and how to incorporate appropriate species into their land use strategies.

The first workshop on 17 November at Wensleydale (a farm outside Gisborne) will include Trees for Bees that provide high-protein pollen in spring and autumn, with information supplied by Dr Linda Newstrom-Lloyd of Landcare Research. See further information at http://www.nzffa.org.nz/farm-forestry-model/case-studies/seymours/

These workshops break new ground with their 'whole farm' approach and region-specific content. It is hoped that the co-operation developed with assistance from the NBA at the first workshop will be repeated around the country.

Diagnosing American foulbrood disease

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

Diagnosing American foulbrood disease (AFB) in honey bee colonies correctly can be difficult.

The first step, once the bees have been shaken off a frame, is to check the cell cappings for those that are darker than the surrounding cells, sunken or have irregular shaped holes chewed in them. Some experience is required to be able to tell the difference between the holes left in cappings as they are being sealed (Figure 1), holes caused by emerging bees, and those chewed by bees trying to remove a diseased larva (Figure 2). Any suspect cell should be uncapped.

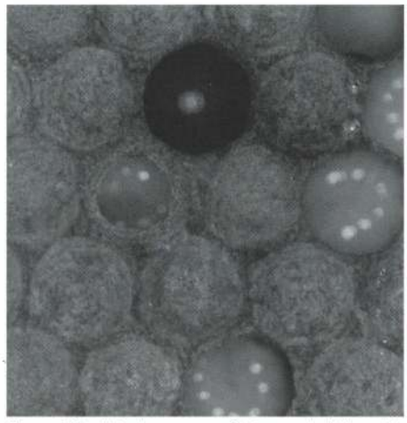

Figure 1. A cell in the process of being sealed (the cell is just to the bottom left of the open cell).

Cells with irregular holes chewed in the cappings will, hopefully, not conceal an AFB-diseased larva or pupa. Bees chew the cappings on cells containing larvae with chalkbrood disease (caused by a fungus), sacbrood disease (caused by a virus infection) and parasitic mite syndrome (caused by varroa). It is important, therefore to be able to recognise these diseases as well so they can be differentiated from AFB. Every registered beekeeper in New Zealand in 2002 should have received a pamphlet with colour photos describing the symptoms of all four diseases.

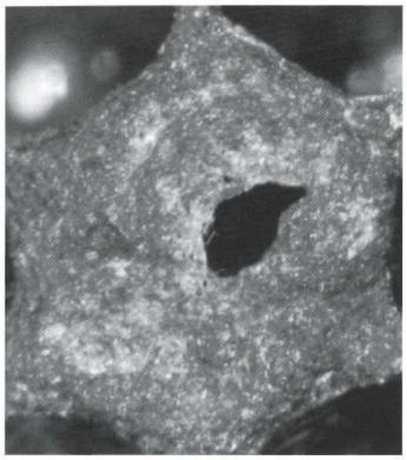

Figure 2. Hole chewed in the capping of a cell where the bees are trying to remove a diseased larva.

Unfortunately, just because one or most of the cells in a hive with chewed cappings contain larvae without AFB this does not mean that there is not one or more containing AFB-infected larvae. Most beekeepers faced with a large number of cells with chewed cappings only uncap a few and if the cells do not contain AFB, assume that the rest do not contain AFB larvae. The only way to be confident that there is not an AFB-diseased larva lurking behind a chewed capping is to remove all chewed cappings. In some cases this may mean uncapping a large number of cells.

> "Just because one or most of the cells in a hive with chewed cappings contain larvae without AFB this does not mean that there is not one or more containing AFB-infected larvae."

Parasitic mite syndrome (PMS), which occurs with high varroa numbers, makes this even more difficult. PMS may result in more than 50% of cell cappings being chewed or sunken. It would usually be too difficult in these cases to check every cell with a chewed capping. However, beekeepers have found out the cost of not doing so the hard way. Their hives were inspected as the honey was removed and correctly diagnosed as having PMS by the beekeeper checking a few cells. The honey was removed, the hives treated for varroa, the honey extracted and the wet supers stored with the other supers. When the control strips were removed six weeks later the PMS had disappeared. It then became obvious that some of the chewed cappings had concealed larvae with AFB and that there was going to be more diseased colonies when the wet supers were used next.

The obvious answer to the PMS problem is to not let varroa numbers get high enough to cause PMS. If PMS is present, treat the colonies without removing the honey and only remove it after the PMS has cleared up and the hives have been checked properly. Alternatively, the honey could be removed and the PMS hives treated. Each PMS hive should be numbered along with the honey supers removed. These should not be extracted until after the PMS has disappeared and the colonies have been rechecked. Alternatively the honey could be extracted and the frames returned to their original supers. These could then be located and destroyed if the hive they came from was found to have AFB.

Disease symptoms

AFB-diseased larvae or pupae may take on a range of appearances as the disease symptoms develop. A larva is initially pearly white curled around the bottom of the cell. As the disease takes hold the larva stretches itself along the lower wall of the cell (PMS larvae normally spiral up the cell). The normally plump larva then slumps in on itself as the bacteria consumes its tissues (both chalkbrood and sacbrood diseased larvae remain plump). The AFB-infected larva then changes from white to a characteristic coffee (with milk) colour.

From there the larva darkens as it dries out, becoming a black scale that cannot be easily

removed from the cell. If a larva is infected later in its development, or with fewer bacteria, it is able to develop further before dying. Early-stage pupae that die can have a structure referred to as a pupal tongue stretched across the opening of the cell (Figure 3). Pupae can also die of AFB much later in their development. Fully formed pupae at the white or pink-eyed stage can be found that are coffee coloured rather than the typical white colour. Other than the colour they look completely normal.

Figure 3. AFB pupa with a pupal tongue.

Coffee-coloured larvae and pupae, and the presence of the tongue are good diagnostic tools. However, the best tool is the ropiness test (Figure 4). A matchstick is used to mix up the larval tissues in the cell. When the stick is withdrawn the larval material will rope out, sticking to both the cell wall and matchstick. This does not occur once the larval or pupal remains start to dry out.

Figure 4. Ropiness test.

All photos courtesy of Dr Mark Goodwin, Plant and Food Research.

What if you're not sure?

Even the most skilled observer will find diseased larvae where the diagnosis is unclear. The colour may not be right or the tissues do not rope out just the right way to be AFB. If this is the case, then the first step should be to search through the rest of the brood to see if a larva with more clear AFB symptoms can be found. If there is still doubt, take a sample and get it tested in a laboratory. Wrap the match used for the ropiness test in plastic and place in a freezer. Then contact AsureQuality Limited (ph 0508 00 11 22) and they will explain how to submit a sample. This testing service is free.

The second approach is to clearly mark the lid of the hive to indicate that it is a suspect AFB hive. Nothing should be removed from the hive until it has passed a second inspection at a later date.

Not all AFB-diseased larvae will be behind darkened, sunken or chewed cell cappings. Some will have cappings with a normal appearance. When these occur in a normal brood pattern they are almost impossible to identify. However, as the brood hatches, the disease cells are usually left behind. It is therefore good practice to uncap any cells that from their position the bee should have emerged, but has not.

There may also be diseased larvae in cells, which are not capped at all; either because the diseased cell has been completely uncapped by the nurse bees or because the larva died before the cell was sealed. Unfortunately these are usually much less obvious than larvae behind chewed cappings.

AFB scale (the dried remains of an AFB-infected larva on the lower wall of a cell) are probably the hardest of all to see. If present in a live hive, there should be fresh disease material that can be more easily identified. The AFB scale cannot usually be removed without breaking up the cell. If in doubt, get a sample tested. To check for scale, the frame should be held upside down with the top of the frame towards the observer. The light needs to shine over the shoulder and into the cells. The shape of the scale resembles the rounded end of a bullet.

[Editor's note: This is the second 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.

We will run these articles on a regular basis over the next 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.]

Waikato Branch colonies

Beekeepers I have 'blethered' with recently report that things are shaping up OK. There is plenty of honey from the willows and other early sources, resulting in strong hives (and the problems that come with that).

I have had some reports that some beekeepers are picking up extra kiwifruit pollination contracts. This could be either from other beekeepers dropping out or a reduction in the reuse of hives. Overall, beekeepers are very busy keeping up with the spring work.

- Stephen Black, Branch President and Waikato Ward representative

[Editor's note: read the other colonies reports on page 19.]

Up in smoke: This photo was taken as a result of the recent AFB outbreak in the Hawke's Bay. Photo: Deanna Corbett.

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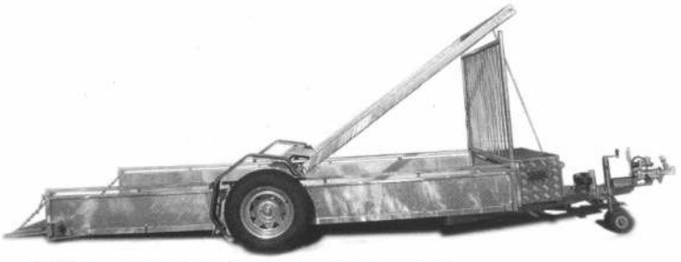

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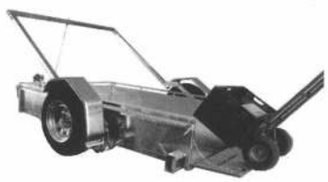

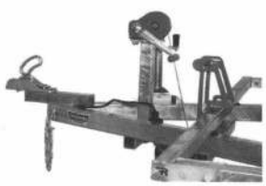

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Auckland Town Hall bees

By Kim Kneijber, President, Auckland Beekeepers' Club

Kim relates the story behind the installation of the beehives at the Auckland Town Hall, starting in June 2010 to the present day.

How it all started

To achieve a beehive placed on an important landmark involved many meetings, much paperwork, organisation and many phone calls. Thanks to Maureen Maxwell (then the NBA's Northern Ward representative), the Auckland Council decided to step forward and work with the idea. I became the honorary beekeeper.

A remit by the Auckland Branch that hives close to ports or high-risk areas should be inspected more than once per year for exotics gave Maureen the chance to place beehives on the veranda of the Auckland Town Hall, and this has provided additional rewards. These sentinel hives assist in providing early warning of any incursions with regular monitoring. However, they also add value by being in a public place. Working closely with Auckland City Council and generating more public awareness of the value of bees has been an accomplishment.

The first press release in July 2010 during Bee Week saw hiveware presented to then Mayor John Banks. The hiveware was to be placed on top of the Aotea Centre, but access was not easy. After reviewing the situation, the front veranda of the Town Hall was deemed to be an appropriate location.

Suitable bees were ordered from Bob Blair, a very experienced beekeeper who raises beautiful queens.

Arrival

As the weather improved the nucs became ready and the arrival time was planned. We needed to incorporate access close by for gear and the delivery of hiveware, so at this stage we decided to include a Victorian design. Country 99 was invited to film a piece for TV.

To include any member of the public who has not worked with bees before I always give a brief safety talk, and give them veils at the very least to wear. (As an aside, I can remember a reporter turning up at home in a dress and high heels. She was a bit surprised to be actually visiting the bees and then dressed up in overalls and gumboots. She had such an experience that the photographer took more photos of her to share at the office than the bees for the story being written, but still a great result.)

> "Management of an inner-city beehive is so different to an urban or rural situation."

I talk through everything as I am working on a beehive if other people are watching, but this time I had everyone working, climbing the clock tower steps with all the gear and bees.

Doors open halfway up the clock tower onto the veranda facing Queen Street and Aotea Centre. The site provides all-day sun and shelter from wind. Queen Elizabeth and the Beatles have also stood on this spot.

Visiting the bees

Visits change as requirements dictate. I try to visit every 10 days during spring and summer and at least every three weeks when the nectar source has dried up. I have made a couple of 24-hour visits for mite drop on sticky boards.

Each visit involves:

- finding parking close by. The underground carpark is not high enough for my high-roofed vehicle, so I have been lucky (to date) to get parking near the street entrance to the Town Hall
- having a few coins for the pay and display
- arriving in normal everyday clothing with a box of gear, obtaining the clock tower keys to go to the second floor, then climbing the very narrow clock tower steps
- opening one very narrow door (the other ones were stuck), putting veil on and lighting the smoker
- making several trips up and down steps. When adding or taking hiveware away or when removing the honey it was a process of carrying several frames down the steps, placing them in a plastic box, covering them, taking them in the lift, carrying them to the car (with veil off to look normal again), always making sure every bee was off the frames involved.

How the bees have fared to date

- Both queens' laying was strong during spring and early summer.
- The young queens were given plenty of room with supers added as required.
- One hive is working as a double brood box and the other a single brood box.
- The single remained this way as its build-up was not the same. I wonder if this was because this hive had the sun on the whole hive body for the most part of the day, whereas the double brood box had some shade from a low wall next to it.
- Both hives required ventilation during summer.
- Frames of bees and brood were removed as the build-up was so strong. These steps were taken as I felt the beehives didn't need to get too large in numbers of bees, and there was to be a break between visits of over three weeks during the holiday season due to the building being closed. This also proved to be a good idea as nectar flow stopped in mid January.
- No honey was harvested after mid January, and what remained on the hives will probably see them through the winter, although when I did a check in →

Bees at work on the veranda. Photo: Gilles Ratia.

July there was a bit of nectar coming in again.

- Double queen excluders were on both hives. Although this means moving any drone comb above the excluder and giving an exit for the drones, the idea of double excluders can assist with swarming but is not a sure means of swarm control.
- The nectar flow during spring and early summer was rewarding for both hives. Two small harvests were extracted and packaged at a local facility, with only the first harvest being presented as gifts or for sale. It has been interesting to note the halt to a nectar source from midsummer. Perhaps working with the council can be planned to have planting of nectar sources throughout the year, not only for the honey bee but other species.
- A big tutu plant is noted in the area; no other plants are noted in the area with the council. No other extraction was carried out that season.
- Organic treatments were on the hives early for varroa as the numbers for both hives were building. Two different treatments have been used.

The extras

Inspections are carried out frequently on the health of the bees and management plans are consistently reviewed.

There are hive records on each beehive and I find them interesting to check against other hives.

Some honey was poured into 250-gram glass jars for gifts, and some into clear plastic jars with white lids. At the stage of processing it was not decided what would happen with this honey, but options became clear as media awareness grew.

At the request of the mayor's press secretary and a journalist, a newspaper article written in April made the front page for several local Auckland papers and also appeared in the May issue of *The New Zealand BeeKeeper*. Media communication these days means the story appeared in other areas too. Follow-up Interviews were requested by several radio stations and TV3.

The Victorian hive prepared for a new season. Photo: Kim Kneijber.

At the same time, working with some council members:

- A label was created for the 'Town Hall Honey'.
- More information was released through the Council's website and by *Our Auckland*, a monthly booklet sent to every Auckland household.

Honey for sale had been set aside, as it was to be released during Bee Week instead of the earlier plans. The honey now had support from a well-known identity: the department store Smith & Caughey was happy to sell on our behalf, with all proceeds going back to 'The Sentinel Hives Project'. This honey sold out within a couple of weeks. Smith & Caughey also supported Bee Week.

The honey, bottled in glass jars, was presented to Auckland Mayor Len Brown for civil gifts during Bee Week and again the media were willing to participate. This time they included information related to bee-friendly plants.

The future

Hive management

- I plan to replace the queens or all the frames to try and control any swarming instinct in spring.
- The queens or bees can then be moved to other sites being planned.
- Recordkeeping is to be improved.
- Replace the floors with screen bottom floors.
- Create better ventilation for summer.
- Monitor varroa more effectively.
- Change frames to always have clean brood cells, and clean honey.
- Collect wax.

Sentinel hives

- Create more sites.
- Invite beekeepers around ports etc to work on a regular monitoring programme.
- Continue making the public aware of issues around the honey bee.
- Educate the public to live with bees in the community.

FROM THE COLONIES

Poverty Bay Branch

Good weather during the willow flowering in September and into early October has seen the hives build up quickly. There is still a lot of variation between hives: some just sitting in three or four frames of bees, probably due to old or poorly mated queens and colder conditions in August, and others requiring splitting. Early September splits had good weather for mating and queens are now laying well. Most pollination crops are a week or two later than last season.

The branch's spring AFB diseaseathon is just about completed, with no AFB found so far. We had five teams operating this season. We have found only one AFB hive (not part of diseaseathon) this spring that I am aware of. In autumn 2011 there were about 16 hives found with AFB, so keep inspecting and be vigilant.

Varroa numbers are very low with spring treatments now being completed. There is no evidence of strip resistance showing up in this district at this stage. Keep alternating the treatments between different chemical families and throw in the odd organic treatment for good measure. Let's keep resistance out for as long as possible.

- Paul Badger, Branch President

Hawke's Bay Branch

Given the current appalling American foulbrood status in Hawke's Bay, we thought we would try something proactive in the form of a 'bring-and-burn' day. This was designed to remove all that old possibly infected beekeeping gear from people's sheds. While we got a lot of very good positive publicity, unfortunately we ended up with only one box to burn. We know that there is a lot of old beekeeping equipment out there, much of it of dubious origin, so we may try again next year.

Apple pollination has been exceptionally late this year, over 16 days later than last year. I suspect our cool spring is responsible but it is amazing how much something like this can vary.

- John Berry, Branch President

Otago Branch

As I write (mid-October) we are in the midst of changeable spring weather but as springs go, this one has so far been kind. The lack of serious wind is perhaps the best aspect, as at least with no wind bees can still get out on cooler days. By all accounts the willow flow has been quite good this year as a result.

We certainly had cool weather for our late September spring field day in Lawrence. A southerly front blew in about midday and soon the white blossoms being blown around were replaced by flurries of snow. This put a stop to the planned hive inspections but a great crowd of about 80 beekeepers, new and old, kept warm in the brand new Golf Club rooms. The Branch thanks Bill McKnight and his Lawrence helpers for keeping us warm and well fed.

The day focused on healthy hives with good discussions on hive nutrition and best practice to maintain a strong colony. Rex Baynes gave an update on the AFB NPMS and noted a pleasing upward trend in compliance rates for both the ADRs and COIs. He warned that next year DECAs will automatically be revoked if ADRs are not received before or on the due date.

A very helpful presentation from local commercial beekeepers on varroa's impact in Central and North Otago was soaked up by all and generated much discussion. Arnon Dag, an Israeli beekeeper and scientist in New Zealand for a year with Asure Quality Limited, gave a good description of beekeeping in Israel. There the government prescribes which varroa control can be used each year (and if and where you may put bees), but one by one the chemical strips have become ineffective. Now, having exhausted these options, they are using organic controls. The most sobering revelation was that some chemical resistance might be permanent. Twelve years after Apistan was pulled out of use because of resistant mites, it was tried again but the mites were still resistant. Using strips carefully and alternating treatments while you still have choices was his strong message.

Mite hunting around the greater Dunedin area still fails to find them but they are now well established in Central and North Otago and recently found in the Maniototo. The last gaps are filling in and most likely this will be the final season without mites for me, but even that is in doubt. I will enjoy it while it lasts.

- Peter Sales, Branch Secretary

News from the Chatham Islands

Hive inspections are under way and thus far we have not come across evidence of AFB or varroa mite—we are praying and are keeping fingers crossed.

How could these two organisms invade our islands? There is one obvious answer: an irresponsible person could import these unwanted organisms on bees brought in from the New Zealand mainland. Shortly Chatham Island beekeepers will engage with Council to put in place biosecurity protections governing the importation of bees. To refresh the DNA and maintain colony viability, it will be necessary to import clean drone semen in a few years' time.

We have on the islands now about 10 people who are keeping bees successfully and those beekeepers are expanding the number of hives that they have. They are also growing their knowledge and awareness of pests and diseases. In the New Year it is likely that a disease recognition course will be held on the island, as it is important to have more than one DECA holder on the island.

We also have five students at Kaingaroa School learning about bees. During the last few months they have searched the Internet for pictures of AFB and varroa mite and are horrified at what both organisms can do to bee colonies. In respect to varroa mite the children have asked, "What do we do to keep it out?". The children have also been studying and photographing local pollen sources under the microscope.

We are waiting for the long spells of fine weather to bring the clover pastures into flower. In the meantime, the queens are marshalling their troops to gather pollen to feed the explosion of bee larvae. Hokotaka, kowhai, mahoe, Chatham Island forget-me-not, akeake and pouteretere are flowering at present, and soon the pohutukawa planted by Stephen Barker on the Kaingaroa shoreline will come to bloom.

If beekeepers are coming to the island, give Mana and Michele a call at 03 305 0618.

- Mana Cracknell and Michele Andersen

Safe transporting of beehives

Low loader trailer set to improve the handling of beehives

By Glen Reid, Renegade Trailers Ltd.

There are many reasons for moving bees and any number of ways it can be done. However, everyone who has ever moved beehives agrees on one point: a successful bee move is an uneventful one!

Commercial beekeeping often requires the constant relocation of hives and transporting of bees on a daily basis. Loading and unloading dozens of hives per day is a task hundreds of beekeepers share in New Zealand.

Until recently the transportation of hives was largely carried out on trucks. Beekeepers would often have to work in pairs, lifting heavy hives onto the back of the truck or employing a crane or similar device to do the lifting for them. Many beekeepers are now using trailers, which are cheaper to operate than trucks and have a lower deck height. However, ramps or lifting are still required to get the hives onto the deck. New Zealand company Renegade Trailers Ltd has invented a low-cost mechanically lowering trailer that is not too different from an ordinary trailer. The patent-pending design incorporates swing arms that enable the deck of the trailer to lower to the ground. The 12' x 6' beekeeper trailer is raised and lowered using an electric or hand winch. A large box is conveniently located on the front of the trailer for storing tie downs and a smoker and the lifting arm cross beam has two large red work lights for night-time operations. Traditional leaf springs are used with readily available trailer components and the trailer body itself is a standard wellside trailer, which can be made in any size and comes with or without a stock crate or rubbish fence. The invention was nominated for an award at this year's National Agricultural Fieldays for the design and its simplicity.

Beekeeper testimonial

Northland beekeepers Mike Crum and Gabriel Martinez identified the need for a Low Loader Trailer after seeing a tandem Low Loader car transporter. After using their first trailer for one day, the benefits became so obvious they traded in their old tandem trailer for a second Low Loader.

"The trailer is great, it definitely works as it is supposed to. The fact that it goes to ground level has improved three very important things: one is that it is much faster to load and unload; another is that it saves all the extra effort of pulling weight up a ramp so I don't even get tired; and last but not least, how much safer it is—there is no risk of falling off a ramp with a load and when the load is beehives it can get quite messy and painful too. The trailer is much lighter than any other trailer that we have used before, making the towing effortless especially in the field; even loaded it is still very easy to tow."

Low Loader Trailers

The Low Loader trailer is the invention of trailer company Renegade Trailers Ltd in Auckland. Glen and Jake Reid, whose father started manufacturing trailers in 1956, developed the low loader trailer to carry their motorbikes. They later recognised the vast number of uses for their trailer design and now manufacture trailers for all types of use, including their recent deliveries to a headstone manufacturer and a road-marking company.

for more info see
www.renegadetrailers.co.nz




Expansion and inspection

By Frank Lindsay, NBA Life Member

I'm writing this in mid-October and the bees are expanding quickly.

We are experiencing a good willow flow and the bees have been gathering nectar and pollen between showers. Cabbage trees are now pushing up flowering spikes and I suspect hawthorn won't be far behind in flowering. All these sources produce good nectar and pollen and because it comes into the hive in a rush, can stimulate swarming if the bees don't have room to store this nectar.

Most of my hives are wintered three high with more than a full super of honey on. Quite a few were left with the cleaned-out honey supers on top, some on top of feeders, some without feeders. Nucs created last year are usually wintered in two supers. I also have hives in areas that provide nectar sources during winter or in the very early spring (kohekohe, banksia and Spanish heath). These hives haven't used very much of the honey stores, and those hives I hadn't got around to quickly enough had packed this nectar around the top of the brood nest and had started making queen cells. I lost two to swarming: one hive almost depleting itself of bees through issuing after-swarms. Others had brought in the nectar and were putting it in the honey supers already (some going up through the top feeder), which was rather fortuitous and sort of a surprise.

It's fairly easy to see which hives are likely to swarm—they have masses of capped drone brood. I have cut these out (to reduce the congestion these drones would have caused and to eliminate a few mites as well), and replaced with an empty frame for the bees to build out again with drone brood. Generally, the drone removal method of mite control requires the frame to be cut out at 18-day intervals but the inclement weather has meant that at 18 days, some hives had completely sealed the drone brood. Others still had large sections of open drone larvae that I have left. I will have to go back in a week to cut everything out in all the hives, to get the bees (and me) back on to a regular cycle of drone production and removal again.

For the rest of the hives, inspections are getting easier: just a quick inspection for queen cells, by tilting back the top brood super and looking along the bottom bar and into the bottom of the brood comb. If I find none, I look for my marked empty frame and cut out the drone brood. I then have a quick look at a couple of frames of emerging brood for disease (I found three AFB cells in a hive the other day: a great disappointment). I judge the population and add a honey super or another full-depth brood super, depending upon the size of the hive.

If I see queen cell development (an egg in a queen cell bud), I split the hive in half or take off a good-sized nuc to reduce the swarming instinct, and add a honey super to provide some room. I also lift two frames of brood up to stop the bees contracting the brood nest.

> "It doesn't take much for a strong hive to get into swarming mode."

The space left is replaced with drawn comb or a foundation frame if the hive is strong and the bees are storing nectar.

I tried something new the other day. Normally, I move splits or nucs to another apiary to prevent any field bees returning to the original hive. But I had heard that if the nucs are transported around for a day and then put back in the original apiary, this travelling would upset the bees, and when released will orientate to the new site and stay with the nuc. Well, it didn't work. I left the nucs on the truck overnight and transported them back again to the apiary. By midday a lot of the field bees had made their way back to the original hives, so I won't be doing that again.

Field days

We no longer have active technical officers (AsureQuality Limited) in the field anymore instructing beekeepers on beekeeping techniques like we did in the good old days before Government cut spending on this sort of activity. The only way new beekeepers can see and learn about the techniques of hive manipulation is to attend field days. You learn best by doing and better under the guidance of experienced beekeepers.

The Southern North Island Branch has just held its branch spring field day. Part of the day was set aside to take new beekeepers into an apiary, split them into small groups and have an experienced beekeeper go through the hives with them.

The hives we were looking at were a mixture of last year's nucs in singles and two-year-old hives in doubles. I examined the first hive in our group to demonstrate the method of inspecting a hive and then let individual beekeepers do the rest. We saw hives full of bees that needed an additional super, a hive with a spotty queen that had a couple of supersedure cells, a hive with swarm cells just starting. We showed them how to make up a nuc and how to encourage bees up into the second super. We put in strips and saw varroa on drone larva in one hive exposed when the supers were separated, as well as lots of frames of beautiful bees. Something it would take a hobbyist a season to see was witnessed in an hour looking through just eight hives.

As an aside, these hives had been treated with food-grade mineral oil cords (handy wipes) and strips were being put in just in case this treatment hadn't worked. To me this was overkill except for the one hive we saw the mites in. This was a small colony and I believe the bees didn't access the cords on top of the frames as they were still sticky. In all the other hives, the cords were dry and were starting to be dismembered by the bees to get this foreign material out of the hives. I'm not sure whether the beekeeper had already checked the mite levels in a few hives beforehand (on which he based his decision to use strips), or if he was doing it to cover himself just in case. →

We are all going into the varroa 'resistance age' and will soon have to use alternative treatments to protect our hives. No matter what treatment option is used (we will have to use several), it's essential to now monitor the results of our treatments, even using strips as the results will vary from hive to hive (as we saw at the field day). We will learn that perhaps that the cords should be placed so they hang down between the frames in small colonies, so the bees have to come into contact with the treatment rather than relying on them seeking out the sweetener in this type of treatment.

Monitoring does take time unless you invest on a few mesh floorboards and place them on a few hives in the apiary. This was not practical for these hives as they were on pallets using one combined floor so other techniques would have to be used; e.g., sugar shake, soap wash or drone forking to identify mite loading.

It was a good day enjoyed by all, thanks to our host and a fine sunny afternoon. My only regret was not asking the new beekeepers working the hives to remove their gloves as the bees were placid as kittens. Without gloves you get to feel the bees and are a lot gentler. I still use gloves when working a lot of hives as you have to get through the work no matter what the temperature or weather conditions. Working individual hives with placid bees is a different story.

Things to do this month

Check feed at least three frames or more of stored honey. Check pollen—there should be a good ring around the top of the brood or in the outside frames. Some areas, especially in farming districts could experience a period of dearth of nectar and or pollen and unless hives are fed with sugar syrup and pollen supplement, they will go backwards. If there is a brood break at this time of the season, it can affect the number of bees in the field during the main honey flow, so watch hives closely and don't let them run out of reserves.

Check hives for AFB. It's a good idea to always look at a couple of frames of emerging brood every time you open a hive. Raise queen cells, super hives (put on another as soon as the bees are covering three frames—waiting to see white wax is too late.

Undertake swarm control measures; i.e., do a quick check by splitting the hive and tilting the supers back and looking along the bottom bars of the second super for queen cell buds with eggs or young larvae in them. Once queen cells have started, the hive should be split—continually removing queen cells is not the answer. Remove old dark frames or those with a lot of drone brood. Move them to the outside if they contain sealed worker brood for removal on the next round. Replace with foundation frames in the second super interspaced with frames of brood. Fit foundation into comb honey super. Monitor varroa mite levels. Plan on getting your strips out just before the main honey flow starts next month.

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