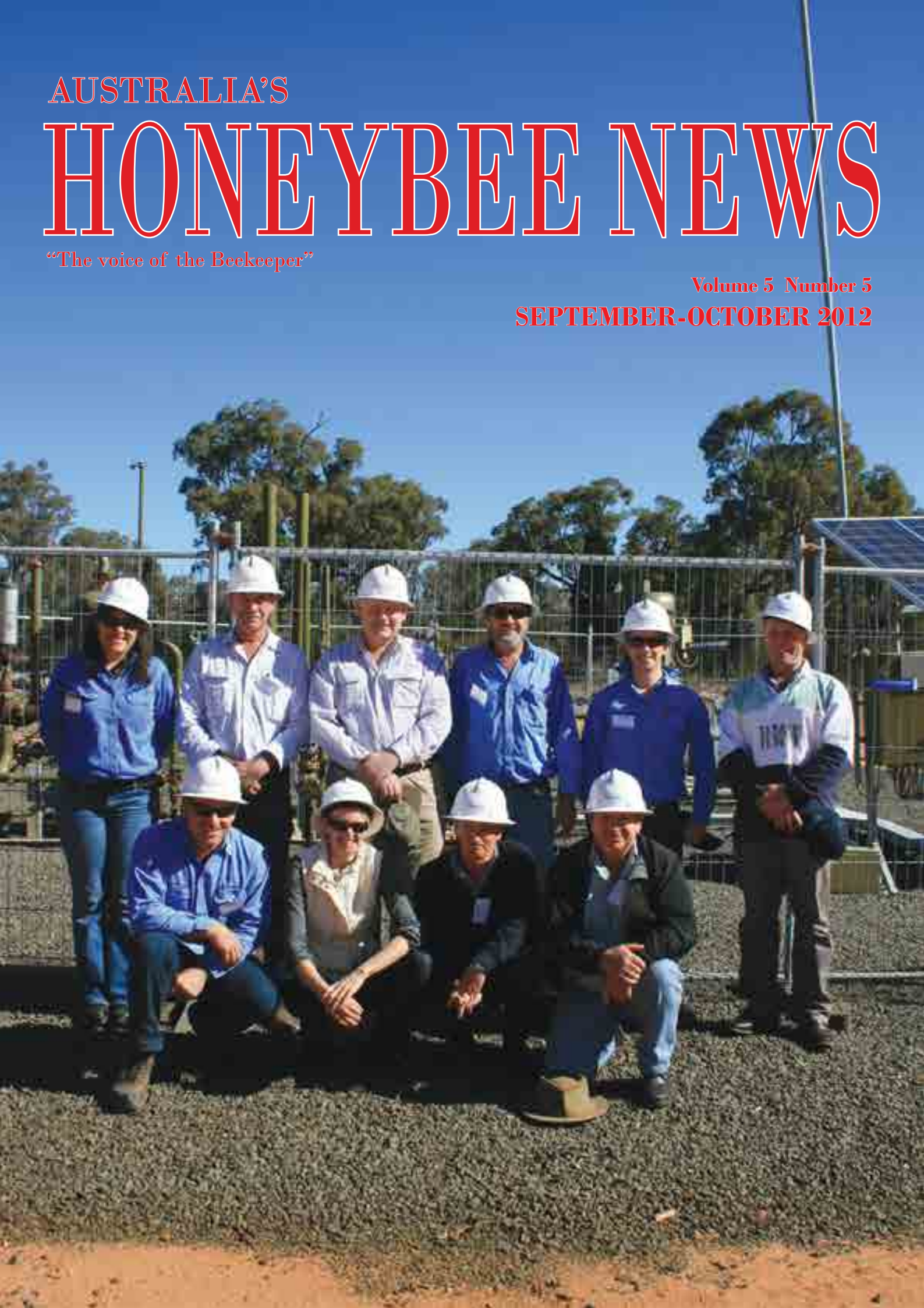
AUSTRALIA'S

HONEYBEE NEWS

"The voice of the Beekeeper"

Volume 5 Number 5

SEPTEMBER-OCTOBER 2012



AUSTRALIA'S HONEYBEE NEWS

The Journal of the NSW Apiarists' Association Inc. (NSWAA)

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COVER: NSWAA State Executive on a field trip with SANTOS Representatives Photo: Dr Doug Somerville

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PRESIDENT'S REPORT

Spring is now well underway and hopefully a good season on the horizon for all (despite what the long range forecaster suggests). Unfortunately this year in my operation there will be one thing missing, a short stocky man wearing khaki overalls two sizes too big cruising around the bee yard making sure I've done things to his liking or in the extracting shed helping out. I urge everyone in this busy time of year not to lose sight of the important things in life, family, friends and good times. It is so easy to get yourself into a position where money/honey becomes everything you think about and do. Take a breath and look around, everyone's time on this earth is limited.

AFB
As President of the NSWAA I am hearing weekly if not daily of new outbreaks of AFB. I have been saying for some time that this is the biggest issue the industry is dealing with at the current time, unfortunately its coming true. I urge every beekeeper to report AFB if they find it in their operation, I have.

The Government needs to see the full extent of this huge problem. Slides for a positive or negative test for AFB should be sent to Regional Vet Lab, EMAI, PMB 8, Camden NSW 2570. Again please report it to the authorities. It is not a crime to find AFB in your hives but I suggest it is one not to do anything about it!!!!

NSW Farmers
On 3 September I flew to Sydney for the day to hold preliminary talks with NSW Farmers. Last President's Report I said that we are looking further afield for help in the policy/lobbying area. NSW Farmers are very keen for us to work together. As long as a suitable arrangement to both parties can be struck it should be a very positive and beneficial outcome for all. The Executive will meet with them to discuss the issue further in Sydney at our next meeting.

Forestry
On 17 August I met with Warwick Bratby from NSW Forestry mostly to discuss the State-based beekeeping policy we are jointly working on. Our next executive meeting will be in Sydney on the 19 & 20 November, we will be meeting with some of the senior forestry policy makers and will be mostly working through the proposed beekeeping policy for the State. Another issue which will be discussed at that meeting will be an audit which has been carried out on a member's sites in the Batemans Bay area. We feel as an Industry we need to know the processes and requirements before any type of audit should be imposed on us.

Conference 2013
Conference planning is well underway and already we have two keynote speakers lined up. Jeff Pettis from US Department of Agiculture and Gary Allsop from South Africa. Both of these speakers are recognised worldwide.

The 2013 Conference will be the 100th year of beekeeper representation in the State of NSW and as so we are planning it to be a much larger affair than usual. Please book your accommodation early to avoid disappointment.

Constitutional Changes
In this edition of HBN there is a table of proposed constitutional changes prepared by Kate, our Secretary. The proposed changes are very straight forward, the key proposed change being Executive Member terms going to two years and a rotation of two on one year and three on the next.

If you have any questions about the proposed changes please contact us.

The Proposed Special Resolution to be put up at next year's Conference is:

'That the Association's Constitution be amended to reflect the proposed changes to clauses 3(b), 7(a), 7(b), 9(b), 9(c), 10(h) and 13(d) as notified to members in the 2012 November/December and 2013 January/February editions of Australia's Honeybee News'.

On the 5 October myself and Bill Weiss, as a past President gave evidence to the NSW Parliamentary Inquiry into Management of Public Lands. The meeting went well and we are looking forward to the final report.

I have been urgently seeking a meeting with the Minister Katrina Hodgkinson, to discuss the Industry's AFB problem and control program around it and some issues around NSW Forestry. To date we have not been successful, which is very disappointing as these are the two key issues we are dealing with at the moment.

On behalf of NSWAA, Condolences must go to the Smith family on their loss of Mr Tim Smith. Tim was the founder of Capilano and a true pioneer of the industry no doubt he will be missed.

Craig Klingner
State President

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NSWAA PROPOSED CONSTITUTIONAL CHANGES

Current Clause 3(b)
All Apiarists resident in New South Wales and the Australian Capital Territory shall be eligible for Financial Membership provided they have duly completed a Form of Application for Membership setting out the total number of hives of bees owned or controlled by the Applicant. All persons who were Financial Members at 1 June 1933 shall be known as Foundation Members. Ordinary membership is available to individuals, partnerships or companies, providing that only one member of such partnership or company shall have the right to participate in ballots according to the constitutional rules for balloting.

Proposed Clause 3(b)
All Australian Apiarists shall be eligible for Financial Membership provided they have duly completed a Form of Application for Membership setting out the total number of hives of bees owned or controlled by the Applicant. All persons who were Financial Members at 1 June 1933 shall be known as Foundation Members. Ordinary membership is available to individuals, partnerships or companies, providing that only one member of such partnership or company shall have the right to participate in ballots according to the constitutional rules for balloting.

Current Clause 7(a)
The Association shall elect, at each Annual Conference, a Council consisting of five Members, hereafter set out, who shall retire annually but shall be eligible for re-election.
No Member of the Association shall be eligible for election to the Executive Council unless he or she has been a Financial Member for at least two successive years immediately prior to the date of the holding of the Annual Conference at which Nominations, for election, are received.

Proposed Clause 7(a)
The Association shall elect, at its first Annual Conference, a Council consisting of five Members.
No Member of the Association shall be eligible for election to the Executive Council unless he or she resides in NSW or the ACT and has been a Financial Member for at least two successive years immediately prior to the date of the holding of the Annual Conference at which Nominations, for election, are received.
Each member shall be elected for a 2 year term and must retire from office at the Annual Conference held at the end of such 2 year term, but if eligible, may seek reappointment.
At each Annual Conference the number of members of the Executive Council that must retire will be as follows:
- at the Annual Conference held in 2013, two members must retire;
- at the Annual Conference held in 2014, three members must retire

this two year pattern will repeat thereafter.
The members who must retire are those who have held office the longest since last being elected or appointed. If 2 or more members have been in office for the same period, those members may agree which of them will retire. If they do not agree, they must draw lots to decide which of them must retire.

Current Clause 7(b)
The Executive Council elected by Conference shall itself elect its President and Vice-President and the full Council shall then consist of the following:
1. President
2. Vice-President
3. Three (3) Councillors

Subject to this Constitution, the management and control of the Association shall be vested in the Executive Council who may make regulations to govern any matters not directly dealt with in these Rules.

Proposed Clause 7(b)
The Executive Council elected by Conference shall itself elect its President and Vice-President and the full Council shall then consist of the following:
1. President
2. Vice-President
3. Three (3) Councillors

Subject to this Constitution, the management and control of the Association shall be vested in the Executive Council who may make regulations to govern any matters not directly dealt with in these Rules.
The President shall serve no more than 5 consecutive years.

Current Clause 9(b)
The rate of the Annual Subscription shall be set at each Annual Conference and shall be calculated on the basis of the Member's ownership or control of hives of bees as follows:

Affiliated/Retired/Student			1 vote
0	to	10 hives	1 vote
11	to	200 hives	2 votes
201	to	400 hives	4 votes
401	to	700 hives	6 votes
701	to	1000 hives	8 votes
1001	to	1500 hives	10 votes
Over		1500 hives	12 votes

Proposed Clause 9(b)
The rate of the Annual Subscription shall be calculated on the basis of the Member's ownership or control of hives of bees as follows:

Affiliated/Retired/Student			1 vote
0	to	10 hives	1 vote
11	to	200 hives	2 votes
201	to	400 hives	4 votes
401	to	700 hives	6 votes
701	to	1000 hives	8 votes
1001	to	1500 hives	10 votes
Over		1500 hives	12 votes
LIFE		maximum number of votes	

Current Clause 9(c)
That the fees be tied to Consumer Price Index (CPI) to the nearest $5.00.

Proposed Clause 9(c)
The Executive has the right to increase subscriptions provided that rise is tied to Consumer Price Index (CPI) to the nearest $5.00.
A vote of Annual Conference is required if a rise greater than CPI is proposed.

Current Clause 10(h)
All questions at Conference, or other meetings may be decided by a show of hands but, on the demand of 12 Financial Members, a Ballot shall be taken in which the voting power shall be on the basis of:

Affiliated/Retired/Student			1 vote
1	to	200 hives	2 votes
201	to	400 hives	4 votes
401	to	700 hives	6 votes
701	to	1000 hives	8 votes
1001	to	1500 hives	10 votes
Over		1500 hives	12 votes

This voting power shall also apply in all polls and postal ballots.

Proposed Clause 10(h)
All questions at Conference, or other meetings may be decided by a show of hands but, on the demand of 12 Financial Members, a Ballot shall be taken in which the voting power shall be on the basis of:

Affiliated/Retired/Student			1 vote
0	to	10 hives	1 votes
11	to	200 hives	2 votes
201	to	400 hives	4 votes
401	to	700 hives	6 votes
701	to	1000 hives	8 votes
1001	to	1500 hives	10 votes
Over		1500 hives	12 votes
LIFE		maximum number of votes	

This voting power shall also apply in all polls and postal ballots.

Current Clause 13(d)
To receive all monies on behalf of the Association and pay the same to the credit of an account in the name of the Association, at such Bank as the Executive Council may direct, such account shall be operated solely by cheque, signed by the Secretary, and one other Member of the Executive Council.

Proposed Clause 13(d)
To receive all monies on behalf of the Association and pay the same to the credit of an account in the name of the Association, at such Bank as the Executive Council may direct, such account shall be operated solely by cheque or electronic banking, signed by the Secretary, and one other Member of the Executive Council.

2013 SHOW

NEXT YEAR THE SYDNEY ROYAL EASTER SHOW WILL RUN FROM:

21 MARCH - 3 APRIL

PLEASE NOTE THESE DATES

A FORM FOR *HONEYLAND* VOLUNTEERS FOR WILL BE IN THE NEXT EDITION

IF YOU REQUIRE ANY INFORMATION CONTACT SHOW COORDINATOR:
BRUCE WHITE (02) 9634 6792

AVANT equipment being used by beekeepers
See Ad Page 9

AFB INFECTED HIVES

This is the latest burn of AFB infected hive material by NSW DPI Regulatory Officers

michael.rankmore@dpi.nsw.gov.au

The use of a bob cat to lift AFB infected beehives into the back of a truck proved to be very efficient. After loading, the hives were transported to a burn site and destroyed. The Rural Fire Service was in attendance.

This action was taken due to the beekeeper failing to notify AFB and failing to comply with a written direction to destroy or irradiate the material.

There were a total of 130 hives. 84 hives were inspected. AFB was confirmed in 13 live hives. There were a total of 18 dead out hives. Five of those dead-outs were confirmed with AFB by laboratory testing.

Dead-out hives that have brood combs which cannot be inspected for disease in an apiary with a current infection of AFB are considered high risk and are treated the same as the AFB hives.

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HONEYBEE R&D NEWS

Honeybee Advisory Committee (HAC)
The process to appoint two members to the Honeybee Advisory Committee (HAC) has been completed. Ben Hooper and Ben Oldroyd were the successful applicants. Ben Hooper is a commercial beekeeper from South Australia, a Nuffield scholar with experience in studying pest and disease management of honeybees and member of the South Australian Apiarists' Association's executive. Ben Oldroyd has been reappointed to the HAC. Ben is a Professor at Sydney University and leads a research group focusing on honeybee biology. I welcome both Bens to the Committee.

This also marks the retirement of Bruce White from the Committee, after 6 years as a valued Committee member. Bruce was recently awarded an OAM for his services to the Australian beekeeping industry, recognition by the wider community of the dedicated service Bruce has given over a long period of time.

Asian honeybee
Five Asian honeybee related projects are to be funded by industry as voluntary contributions outside the levy as part of the Asian Honeybee Transition 2 Management Program. These are:

- Inter-specific matings between *A cerana* and *A mellifera*? – Ben Oldroyd
- Development of an attractant specific to *A cerana* Java - David Guez
- Establishing the disease status of *A cerana* Java strain in the Cairns region - John Roberts
- A strategy to address concerns of countries that import Australian honeybees - Michael Clarke
- Risk assessment of ports for bee pests and pest bees - Simon Barry

Preparing for Varroa – Preparing for Varroa – How susceptible are Australian honey bee stocks? Project summary
Free (2 pages)
Code: 12-054 **Author(s):** Ben Oldroyd
Published: 25 Jun 2012

One of the greatest threats to Australian honeybees is the exotic mite *Varroa destructor*.

The mite infests the brood cells of bees, weakening the pupae and making it susceptible to viral diseases. Varroa is present in all beekeeping countries worldwide, with the single exception of Australia.

Where Varroa is present, it devastates hives, and requires intensive treatment with miticides to manage mite populations. What level of resistance do Australian bees have to Varroa?

As part of this project, seven lines of Australian and three lines of American honeybees were evaluated for their resistance to the parasitic mite Varroa destructor. The evaluation shows that Australian stocks lack resistance to Varroa, and that an incursion of Varroa would have catastrophic effects.

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RAS - HONEY JUDGING TUTORIAL

The Royal Agricultural Society of NSW (RAS) has a long history with the apiculture (beekeeping) industry in Australia. Competitions for apiculture began as early as 1888, appearing in a variety of sections before being given their own in 1901. Today, the apiculture competition has grown to become the Sydney Royal National Honey Show consisting of classes including honey, bees and beeswax, as well as other associated products including candles, wax moulds, mead and pollen.

In 2010, three commercial classes were included into the competition. Many agricultural shows across the state also have apiculture competitions, aiming to reward the producer and generate interest in the industry.

One of the problems facing these competitions, however, is the lack of people with the skills and knowledge to judge the products. Bruce White OAM, a retired apiary officer from the NSW Department of Agriculture and hobby beekeeper, is all too familiar with this issue, being one of only a handful of honey judges in the state.

Bruce has been judging honey since the 1960s. He says that a lot of local shows often call on him asking him to judge at their show, as they find it difficult getting judges. Many country shows end up asking people that judge the jam, for instance, to judge the honey, which is not ideal as they're not trained in honey judging.

Following a discussion about the issue between the RAS Agriculture Committee and Bruce, he agreed to lead an inaugural honey judging tutorial to pass on his skills, so that more people were equipped with the knowledge to judge honey.

The aim was to get people from country and Sydney areas to gain experience in judging honey and honey products and get some understanding to what the criteria was, so they could submit their name to judge at country shows.

There was a great response to the workshop, with 37 people attending onsite at the RAS in August, including beekeepers, school teachers, RAS Councillors and people that generally wanted to know more about honey.

The course was structured around the Sydney Royal National Honey Show schedule. Participants gained hands-on experience by judging a range of different honeys, focusing on liquid honey.

With a selection of 120 jars of honey, Bruce led the class through the method of allocating specific points to the different varieties of honey, based on the competition schedule. Impressively, of the 37 people that attended the course 25 came away feeling competent to judge honey at local and country shows. Their details were submitted to the Agricultural Societies Council, and they will hopefully soon be judging honey at their local show for their community. **www.sydneyroyal.com.au/honey**

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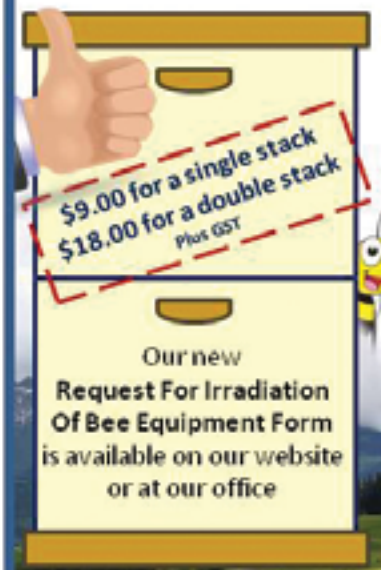

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New Zealand Beekeeping Conference - The Scary Bits

Amazing, I received a question after the last article on the 2012 NZ Beekeeping Conference, "So what are the scary bits?" Someone reads my articles. Thanks Dad!

In brief, the scary bits are: poisonous honey; alkaloids; sugar contamination of honey; honey export consignments rejected; antibiotic exposure on kiwifruit; very scary competition between beekeepers for manuka sites; honey substitution; expensive queens, maybe not?; other strange antibiotics and finally the icing on the cake, failing varroa mite treatments.

Tutin is synonymous with **poisonous honey** in NZ. It occurs when bees collect honeydew from passion-vine hoppers that have been feeding on tutu (*Coriaria arborea*), a poisonous NZ shrub.

The maximum level of tutin allowed in honey is 2 milligrams per kilogram and the maximum level of tutin contamination in comb honey is 0.1 milligrams per kilogram. Tutin levels over 2mg/kg are relatively uncommon, the level needed to be toxic. These limits are set in Standard 1.4.1 of the Australia New Zealand Food Standards Code

Usually this is not an issue in blended honey, but can be a major problem in comb honey or single variety honey sourced later in the season from various locations in the North Island. Testing is available and of the 441 samples tested in 2011, 160 were positive. There is no doubt a sample bias here as beekeepers nowhere near tutin areas are not likely to be very motivated to submit samples.

Waikato and the Bay of Plenty are the likely hot spots for tutin honey followed by Hawkes Bay as the highest risk area. In the last season 2,500 honey samples were tested with 828 positive. More information on tutin can be found on: www.foodsafety.govt.nz/industry/sectors/honey-bee/tutin/index.htm

Naturally occurring PAs **in Paterson's Curse and Vipers Bugloss honey** are a major concern for both Australia and NZ. PA stands for **pyrrolizidine alkaloids** which are regarded as having negative implications for human health. There are apparently 200 different PA compounds. A sum of $489,000 has been set aside to address this issue, which has also been supported by the Australian government. This is seen as a commercially sensitive problem for Australia and New Zealand, even though many of the floral species exhibiting PAs in their honey actually originate from Europe.

The irony of the PA issue is that the Echium species (Paterson's Curse and Vipers Bugloss both major sources of honey within Australia) are native to the Mediterranean area of Europe and it is the EU which is creating the most fuss about PAs in honey. Echium derived honey is also harvested in Canada and the USA.

If you live in NZ, you probably already know lots about PSA. **PSA is a bacterial disease of kiwifruit** with major effects on Gold kiwifruit. Speculation at the conference pointed a finger at imported Chinese pollen as being the source of this disease. Mechanical pollination has become increasingly attractive for kiwifruit growers. The pollen is mixed in suspension and sprayed onto the flowers. Each fruit requires 13,000 pollen grains to ensure 1,300 seeds are set to form a well shaped fruit. The flowers are receptive for 7 days with 4 to 5 kg of pollen per hectare required. Honey bees possibly help in the spread of the pollen when applied mechanically.

The PSA bacteria arrived 2 years ago and reports that this disease will probably wipe out Gold kiwifruit are common. Very little is known about the disease and how to manage it. So far 46% of all Gold fruit orchards in NZ are affected, with the male vines more susceptible than female vines. Symptoms include leaf spot, shoot dieback, cane dieback and exudates.

A new variety, Gold3, demonstrates some resistance to PSA bacteria. It is reported to be high yielding, easy to grow, taste similar to the old gold variety and has the same storage life. As of 2010 there were 475 ha of Gold3 and 2,330 ha of the old gold variety under cultivation. In comparison the mainstay of the industry, Haywood, had 9,937 ha under vines and organic Haywood 558 ha under vines.

As the PSA bacteria is viable in a beehive for 9 days there are major restrictions in the movement of beehives into and out of orchards. Where historically the same hives may have been used to pollinate two kiwifruit orchards, one with an earlier flowering period and one with a later flowering period, this is no longer possible. Kiwifruit pollination service fees were said to be $160/hive.

The big concern for beekeepers is that orchardists are using Streptomycin to control the disease and in some cases kiwifruit growers are ignoring beekeeper concerns. Last summer Streptomycin was used on 356 orchards. The issue is, will this antibiotic find its way into beehives? The antibiotic is applied pre-flowering. Zespar the major player in kiwifruit in NZ have conducted 8,500 residue tests. A lot of media attention has been given to a few rogue growers using Streptomycin not according to advice.

Manuka honey has been very kind financially to the NZ beekeeping industry in recent decades. Beekeepers have been receiving $20 to $30 /kg for active and $12 to $14/kg for non-active manuka honey. This far exceeds the price paid for any other honey variety. Historically this floral source of honey was avoided by beekeepers due to the dark colour and jelly consistency of the honey produced. Now beekeepers have become extremely competitive for manuka sites. Property owners have caught on and are receiving 10 to 20% of the honey crop or $50/hive as payment for the beekeeper to use their properties. I heard a few stories where beekeepers were hiring helicopters to move beehives into remote locations. One beekeeper has purchased a bush block covered in manuka and gorse due to its value as a beekeeping resource.

The story gets worse. In this day and age of computers it is possible for a beekeeper to sit in front of a screen, logged onto the internet, scanning maps and identifying all

the major areas of manuka in their operational area. You then identify individual properties. You make up a flyer or letter with an attractive financial offer and place this in all the road side mail boxes that have the higher value manuka resource. Obviously this becomes a very attractive proposition to the property owner. Long-held sites by the encumbered beekeeper are all of a sudden under threat. When the stakes are high the rules change! Ironically this last season was a disaster for manuka honey production in many parts of the North Island. One area, the Coromandel Peninsula only yielded two kg of manuka honey per hive.

Fake manuka honey has become a significant problem. Specifications for mono-floral honey are required. There are no current international standards to define active honey. There is an opportunity for NZ and Australia to develop an international standard for manuka honey. The cost to develop a standard was quoted to range from $50,000 up to $150,0 00. Active honey testing methods are ill-defined with many claims. Four varieties of *Leptospermum scoparium* vary in their activity levels. There is no activity from honey derived from *Kunzea erricoides* even though many of the physical characteristics of the honey from this species are similar to manuka.

Activity is said to rise in stored honey for the first 12 months, then decline. The HMF levels also rise and exceed acceptable levels at 5 years. The beekeeping industry needs an industry-wide definition and measurement for active honey, including:

- minimum accuracy requirements for test
- performance based framework
- high level testing protocols
- guidance on active vs. non-active
- measures to give consumer confidence

Another residue problem reported at conference was that of nitrofunazone, a broad spectrum antibacterial which belongs to the nitrofurans group. There is no acceptable residue. Apparently it can be found naturally in some honey and the EU has set a 1ppb maximum residue level in all food.

Two shipments of NZ honey to the EU have been found to have detectable levels of this chemical. The honey originated from kamahi and clover. Samples that tested negative in NZ have tested positive in Europe. The chemical may occur naturally in some honey or it may have arisen from protein supplements being fed to bees. This is an issue I had not heard of before and wondered if it might pop up in Australia, particularly if it naturally occurs in some honey varieties.

Sugar contamination of manuka honey has become a major issue for the NZ beekeeping industry. The international isotope test (AOAC 998-12) to detect C4 sugar contamination in honey was developed in 1978, since then it has had 84 changes/additions to the protocol. NZ is getting a poor reputation for honey failing this C4 test on the world market. From March 2012 to June 2012, 86 honey samples have been tested by one NZ company with 26 samples failing the test equal to a 30% failure rate.

Shipments from NZ to international destinations which have failed the C4 test include 2 x China, 4 x USA and 3 x Europe. As a result the NZ honey exporters involved are targeted with increased testing of subsequent imports.

Another set of figures provided indicated that out of 180 samples tested, 124 passed (69%) and 56 failed (31%). Speculation on the possible reasons for these failed tests included: greed by the addition of sugar syrup to beehives when on a honey flow with the desire to increase manuka honey yields; various beekeeping practices; flawed AOAC 998-12 method for testing C4 sugar.

While sugar feeding is an excellent management tool to keep colonies alive, to stimulate hive activity and generally improve the pollination efficiency of a hive, research has demonstrated that feeding more than three litres of sugar syrup per hive will more than likely result in a positive C4 test.

With more than 20 tonne of protein supplement being used in beehives in NZ per year, this may possibly be causing problems with false positives with the C4 sugar test. Protein sources other than the pollen from the floral source being gathered by the bees are likely to result in a positive C4 test. While this in practice has not meant that the honey has been purposely contaminated by sugar syrup either added or fed to a beehive by a beekeeper, the result is the same with a positive test leading to the rejection of the honey.

Another major problem, particularly with manuka honey is that the bees do not collect much pollen from this flowering event with the majority of the floral rewards being nectar. The international C4 test will potentially identify this honey as positive for sugar contamination even though it is not. This occurs as a result of the honey tested having high levels of pollen from floral sources other than the main source of nectar collected at that time.

Even though many of the positive sugar tests were not due to beekeepers purposely contaminating honey, C4 sugar in manuka honey has become a major issue.

Other interesting points picked up at conference:

- Queens are $30 to $35 each, very nice money if you can get it if you are a queen breeder. Equal to $AUD23.40 to 27.30. This is for commercial quantities.
- The easier and more effective treatments used to control varroa mites are starting to show signs of losing their effectiveness. The alternatives are far more variable in the mite control levels achieved and in some cases more dangerous for beekeepers to handle.

Many of the issues covered by the NZ conference and discussed at the bar are also real problems for Australian beekeepers. The Australian beekeeping industry should be taking a very active interest in finding solutions to many of these issues.

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HOW BEES DECIDE WHAT TO BE

Johns Hopkins scientists report what is believed to be the first evidence that complex, reversible behavioral patterns in bees – and presumably other animals – are linked to reversible chemical tags on genes.

The scientists say what is most significant about the new study, described online September 16 in *Nature Neuroscience*, is that for the first time DNA methylation "tagging" has been linked to something at the behavioral level of a whole organism. On top of that, they say, the behavior in question, and its corresponding molecular changes, are reversible, which has important implications for human health.

According to Andy Feinberg, M.D., M.P.H., Gilman scholar, professor of molecular medicine and director of the Center for Epigenetics at Hopkins' Institute for Basic Biomedical Sciences, the addition of DNA methylation to genes has long been shown to play an important role in regulating gene activity in changing biological systems, like fate determination in stem cells or the creation of cancer cells. Curious about how epigenetics might contribute to behavior, he and his team studied a tried-and-true model of animal behavior: bees.

Working with bee expert Gro Amdam, Ph.D., associate professor of life sciences at Arizona State University and the Norwegian University of Life Sciences, Feinberg's epigenetics team found significant differences in DNA methylation patterns in bees that have identical genetic sequences but vastly different behavioral patterns.

Employing a method that allows the researchers to analyze the whole genome at once, dubbed CHARM (comprehensive high-throughput arrays for relative methylation), the team analyzed the location of DNA methylations in the brains of worker bees of two different "professions."

All worker bees are female and, within a given hive, are all genetically identical sisters. However, they don't all do the same thing; some nurse and some forage. (Ed. I suspect that all these bees were single drone inseminated, otherwise can all the bees within a given hive be identical?).

Nurses are generally younger and remain in the hive to take care of the queen and her larvae. When nurses mature, they become foragers that leave the hive to gather pollen and other supplies for the hive. "Genes themselves weren't going to tell us what is responsible for the two types of behavior," Feinberg says. "But epigenetics – and how it controls genes – could."

Feinberg and Amdam started their experiment with new hives populated by bees of the same age. That removed the possibility that any differences they might find could be attributed to differences of age. "When young, age-matched bees enter a new hive, they divvy up their tasks so that the right proportion becomes nurses and foragers," explains Amdam. It is these two populations that were tested after painstakingly characterizing and marking each bee with its "professional," or behavioral, category.

Analyzing the patterns of DNA methylation in the brains of 21 nurses and 21 foragers, the team found 155 regions of DNA that had different tag patterns in the two types of bees. The genes associated with the methylation differences were mostly regulatory genes known to affect the status of other genes. "Gene sequences without these tags are like roads without stop lights – gridlock," says Feinberg.

Once they knew differences existed, they could take the next step to determine if they were permanent. "When there are too few nurses, the foragers can step in and take their places, reverting to their former practices," says Amdam. The researchers used this strategy to see whether foraging bees would maintain their foraging genetic tags when forced to start acting like nurses again. So they removed all of the nurses from their hives and waited several weeks for the hive to restore balance.

That done, the team again looked for differences in DNA methylation patterns, this time between foragers that remained foragers and those that became nurses. One hundred and seven DNA regions showed different tags between the foragers and the reverted nurses, suggesting that the epigenetic marks were not permanent but reversible and connected to the bees' behavior and the facts of life in the hive.

Dramatically, Feinberg noted, more than half of those regions had already been identified among the 155 regions that change when nurses mature into foragers. These 57 regions are likely at the heart of the different behaviors exhibited by nurses and foragers, says Amdam. "It's like one of those pictures that portray two different images depending on your angle of view," she says. "The bee genome contains images of both nurses and foragers. The tags on the DNA give the brain its coordinates so that it knows what kind of behavior to project."

The researchers say they hope their results may begin to shed light on complex behavioral issues in humans, such as learning, memory, stress response and mood disorders, which all involve interactions between genetic and epigenetic components similar to those in the study. A person's underlying genetic sequence is acted upon by epigenetic tags, which may be affected by external cues to change in ways that create stable – but reversible – behavioral patterns.

NICK'S NEWS
from DPI NSW

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Recovery of slimed combs (Trial 5)

This will be the last of a series of articles written on SHB (small hive beetle) research I did that was funded by the Rural Industries Research and Development Corporation (RIRDC) Honeybees.

In this trial I looked at some ways to recover combs that had been "slimed" by SHB larvae. They included soaking combs in water, pressure hosing, or washing in dilute bleach solution, then observing whether it offered any benefit over no treatment, in terms of the subsequent willingness/ability of bees to re-use damaged combs.

Sixteen full depth frames that had been "slimed" by SHB larvae were obtained from four "dead out" nucleus colonies. No active bees remained in the colonies and the last of the SHB larvae were leaving the hives to pupate. The frames were sorted into four groups of four frames each. Each group was exposed to one of three treatments or the control (which nothing was done to). The frames were a mix of wax and plastic foundation of varying age and condition. The trial commenced at the beginning of May at Bathurst.

Treatments tested were:

1. frames soaked in water for 12+ h. After soaking the frames were gently rinsed with a hose to remove any loosened slime.
2. a thorough hosing of the frames with a thumb over the hose to give the frames a blast with water to try and remove and wash out the "slime".
3. half a litre of bleach (125 g/L Sodium Hypochlorite) was mixed in 15 L of water. The frames were immersed for 15 min and occasionally agitated. They were then rinsed with a gentle hosing off to remove the bleach and any loosened slime.
4. control – the frames were left undisturbed.

Excess water was shaken from the frames after treatments.

The four frames for each treatment were then put together in the centre of the honey super, replacing the four centre frames, in four two-box hives of near equal strength. A separate hive used for each treatment. The colony activity was low leading into winter with no nectar coming into the hives.

Visual inspection and photographs were used to compare the bees abilities to resurrect the treated frames after one week in the hives and then again after one month.

The supers of these hives, including the treated frames, were removed to pack the bees down for winter and placed in cold storage. Due to some hive losses the bleach treated frames were the only ones returned to a hive in spring and were inspected and photographed on the 4 December 2009.

Washing technique
It was observed during the treatments of the frames all three washing techniques removed some of the sliming as could be seen by the discolouration of the wash water, however the majority of the slime residue was not easily dislodged and remained on the frames for all treatments. Neither the water nor bleach solution appeared to help breakdown or dissolve the slime residue on the combs. The slime residue did change to a lighter colour while still wet. The pressure washing treatment also caused partial braking of the combs but the damage was of no consequence.

Frames being soaked for over 12 hours

Bee activity
Despite the approaching winter the bees entered the supers to clean out the slimed frames. At the one week post-treatment inspection more bees were observed on the slimed frames than on the other frames in the supers for all treatments. Already most of the slime residue had been removed. Where the combs were very old and black, or damaged by wax moth, the bees had chewed the cells right back, removing large areas. Debris was at hive entrances for all colonies containing slimed frames as opposed to other colonies in the apiary. No noticeable differences between treatments were observed, with all combs being cleaned up and chewed back where necessary.

Debris at hive entrance

The bees did the majority of the cleaning up of the frames in the first week in the colony. Only small amounts of further cleaning had occurred one month after treatment. With the onset of winter very few bees remained in the super, with bees predominantly in the brood box with no comb rebuilding (new wax) evident.

Honey contamination
Due to an exceptionally dry autumn, winter and spring very little food (nectar and pollen) was available for the bees and many of the colonies died. Only one of the honey supers which contained the frames that had been treated with bleach was returned to a colony post winter. Inspection of these frames seven months after treatment (4 December 2009) showed the bees rebuilt and resurrected the structure of the comb with fresh wax. Nectar was being stored in the regenerated combs with no noticeable affects from the previously spoilt honey and there was no evidence of nectar/honey fermentation occurring.

The photos below provide an example of a frames resurrection by the bees over time:

Bleach treatment – frame 3

Top left, taken on the 3/5/09 before treatment. Top right, taken on the 10/5/09 after one week in the hive. Bottom left, taken on the 3/6/09 after one month in the hive. Bottom right, taken on the 4/12/09.

Discussion
Visual examination of the frames indicated that there was no difference between any of the treatments tested to clean slimed combs and the control. Indicating the cleaning methods used in this trial were a waste of time and effort providing no benefit to the bees. Other treatments and/or methods may be more effective but further investigation is required. The slimed frames with plastic foundation appeared to withstand the treatments better and also remained more intact. If comb damage was so severe that comb recovery was not an option then plastic foundation frames could be easily cleaned scraping back the cells from the foundation before reuse.

The speed at which the bees took to cleaning up the slimed frames was surprising, considering the conditions and the time of year. The bees did not require this space for any purpose such as nectar or pollen storage. However it appears the slimed combs caused distress to the colony, driving the bees to actively clean them up. After a week in the hives the bees had removed the majority of the slimed material from the frames. The time of year the trial was done did not seem to prevent bees from cleaning the slimed frames. Heading into winter may have also minimised the chance of the colony succumbing to SHB because of low SHB activity and reproduction in the cooler months.

Ideally the recovery of hive equipment by bees should be done at times or in areas with low SHB levels. This minimises the risk of the cleaning hives succumbing to SHB because of the slimed material, stress and hive manipulations. Unfortunately it is often difficult or impractical to utilise such locations or periods but in areas with very few SHB or in hives with good SHB control, equipment recovery could be achieved throughout much of the year with minimal risk.

The bees tended to chew back the old dark cells on frames more severely. For these to be returned to being useful productive frames the bees have to rebuild much of the comb. Producing wax uses honey, resulting in lost hive production. Recovering the slimed combs would be similar to replacing the frame or renewing the foundation but with the disadvantage of the old combs harbouring diseases.

The economics in resurrecting old combs is questionable. Beekeepers should inspect frames thoughtfully gauging for themselves what level of damage is recoverable and what is not. Removing old disease-harbouring combs and replace with a new foundation/frame follows good beekeeping practise of replacing frames regularly. Economic considerations need to be taken into account at all times.

Unfortunately for this trial the bleach treated slimed frames never accumulated adequate honey to extract due to the poor spring and summer seasons. It would have interesting to have had this honey tested to see if there was biological contamination as a result of "sliming" caused by the yeast *Kodamaea ohmeri* spread by the SHB. No assessment could be made on whether the honey would be contaminated, but no evidence of nectar/honey fermenting was observed in the combs on 4th December 09.

There is a report in the literature of a beekeepers experience where he had an extremely heavy infestation of SHB adults in his hives. He returned some weeks later to remove honey only to find the SHB numbers had declined to more normal levels. On precautionary advice the extracted honey from these hives was kept separate. After a few weeks in storage the honey started to ferment. This potential for yeast contamination needs to be further investigated to ensure the quality of Australian honey.

The trial only looked at frames with no SHB larvae present. For frames infested with larvae it is recommended that control of the larvae be achieved before placing them in a hive for cleaning. Experience has shown that a strong colony of bees is capable of removing small SHB larvae from infested frames. With larger SHB larvae the bees seem unable or unwilling to remove them, even in a strong hive. Large numbers of SHB larvae on slimed frames being placed in a colony to be recovered could, if severe enough, result in further SHB infestation and/or the hive loss. The amount of slimed material a hive can clean will depends on the strength of that hive.

Caution should be given to overloading a colony with slimed material. Too much at once could be detrimental to the colony. Too much slimed material will distract bees from other tasks in the hive therefore costing the hive in some way and could even result in SHB taking over the colony or causing the colony to abscond.

Another factor to consider is side affects of putting bees to work and creating stress in a colony approaching winter. Handling and opening hives in late autumn and winter has been shown to be associated with high levels of *Nosema*. Perhaps placing slimed frames into bee colonies will promote *Nosema* infection. This may have contributed to the loss of some of the hives used in the experiment. It is also possible that they died out due to the extreme seasonal conditions and lack of food. As many other colonies not exposed to slimed frames also died post winter, mainly through starvation.

If considering resurrecting slimed combs in hives beekeepers need to remember the every present risk of transferring diseases, especially American foul brood disease (AFB). The risk is heightened by the difficulty in identifying AFB symptoms in a colony infested with SHB

larvae. The slimy mess can make AFB symptoms difficult to see. Often the stress and decline of a hive caused by a disease may have pre-disposed the colony to SHB damage in the first instance.

Another issue needing mention is the human health risk that the yeast *K. ohmeri* can pose. There have been a small number of reported infections and deaths overseas attributed to *K. ohmeri* in severely immuno-compromised individuals, both young and old. The yeast can cause fungaemia (infection in the blood), funguria (yeast in the urine), endocarditis and peritonitis (Yang *et al.*, 2009). With limited knowledge or cases to beekeepers precautionary care is recommended such as protective equipment, including water proof gloves and a face shield, when handling slimed bee equipment especially for operators with suppressed immunity, to minimise potential exposure to the yeast. The threat of *K. ohmeri* needs further investigation so beekeepers can be made aware of the potential dangers and necessary precautions when handling slimed equipment.

Implications
The practical implication for the beekeeper is in knowing that, although SHB can be very destructive to a honey bee colony, hard ware such as hive boxes, lids, excluders and bottom boards can be readily recovered for subsequent use. If frames are slimed but the comb integrity is still good there is no need for their destruction as they can be returned to a functioning state by the bees with no observed contamination or hive health issues. No benefit was to be gained from washing frames, either in water or diluted bleach, prior to returning them to hives. But please, remember the risks associated with the transfer of any equipment between hives and the possible transferral of disease, particularly AFB.

APIMONDIA SYMPOSIUM

Queen Breeding, Selection and Honey Bee Health
Quebec City, Canada 16-18 November 2012

We are pleased to renew our invitation to participate in the Apimondia Symposium "Queen Breeding, Selection and Honey Bee Health", which will be held in Quebec City, Canada, from 16 to 18 November 2012.

All symposium sessions will be in English with simultaneous translation to French. You will find all the necessary information in English and French at the following link:

www.craaq.qc.ca/le-calendrier-agricole/apimondia-symposium-2012/e/1205

If, by any chance, you are not able to connect directly to this web link, we suggest that you cut and paste the above string into your browser which should allow you to access the relevant web pages.

Here below is the list of the invited speakers that will deliver their presentations at the symposium:

Etienne Bruneau, President, Apimondia Scientific Commision for Technology and Quality

Ralph Büchler, Ph.D., Kirchhain Bee Institute, Germany

Sue Cobey, Bee breeder and geneticist, University Davis, USA

Jay Evans, Ph.D., Research scientist, United States Department of Agriculture, Agricultural Research Service, Bee research laboratory, USA

Ingemar Fries, Ph.D., Swedish University of Agricultural Sciences

Gilles Ratia, President of Apimondia

Wolfgang Ritter, President, Apimondia Scientific Commission for Bee Health, Germany

Marla Spivak, Ph.D. in Entomology, University of Minnesota, USA

Dennis van Engelsdorp, Assistant Research Scientist, University of Maryland, USA

Looking forward to seeing you in Québec City.

Riccardo Jannoni-Sebastianini
Apimondia Secretary-General

NSW Government Licensing Service (GLS)

An update on recent changes in Beekeeper registration system

Renewal and final notices templates have been recently updated to reflect available on-line service for new registrations and renewals. New templates started to be mailed out to beekeepers in mid August. The GLS website for beekeeper registration is: www.licence.nsw.gov.au.

There are two options on-line: 'Renew' for existing users and 'Apply now' for new users:

When you choose 'Apply Now', the website shows popular licences. To get to the beekeeper system, click on the button 'Click here for full list of online applications'.

The beekeeper licence system will look like this below:

NSW Department of Primary Industries (NSW DPI) intends to discount on-line renewals (also pensioners etc) but can't until the NSW Apiaries Regulation is reviewed and remade, hopefully by 1 September 2013.

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10 September 2012

Mr Craig Klinger
Klingers Honey Co
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Glen Innes NSW 2370

Dear Mr Klinger

Re: Letter of Recognition

We refer to our recent conversation in regards to a letter of recognition of the NSW Apiarists Association interest in the Pilliga State Forest.

Santos conducts petroleum exploration and assessment activities within the Pilliga State Forest under a permit to occupy. We understand that Association members also hold a Permit to Occupy in relation to the State Forest for the benefit of its members.

Santos recognises that the Association and the member's affiliates that it represents are an important industry and community stakeholder group in the Pilliga State Forest. We are committed to upholding our principles of operating in environmentally and socially responsible ways. To this end we would like to maintain a close relationship with you to ensure our activities can continue to co-exist successfully.

Santos will endeavour to work together where possible.

Yours Sincerely

CMcMahon.

Cate McMahon – Santos QNT Pty Ltd
Community Engagement Team Leader

YOUR EXECUTIVE MEET WITH SANTOS

In an endeavour to put beekeepers' minds at rest, your Executive along with Dr Doug Somerville and Secretary, Kate McGilvray, arranged to meet with Santos representatives on 13 August last at Narrabri. This meeting coincided with our executive meeting which was scheduled at the same time.

Santos were very accommodating and organised a meeting at their offices where they gave us an overview of the Company and the works happening in the 'Pilliga'. They also organised a very extensive field trip during the afternoon and the representatives present were involved in community coordination, community engagement, field supervising, operations maintenance and field environment.

Areas of concern regarding coal seam gas mining in areas of the Pilliga and forests generally were discussed at length while visiting the Reverse Osmosis Plant, a production gas well, the Bohena rehabilitation area, existing pipelines and the Wilga Park Power Station sites.

From the various discussions during the afternoon we were able to ascertain the following information:

As Santos' production progresses the **waste water** will be piped to a recently purchased private land site where it will be treated by the Reverse Osmosis Plant (desalination). On completion of this treatment approximately 80% of the water is restored to usable quality drinking water and will be used to benefit the community (irrigation, stock water etc). The balance of 20% is brine and this will be held in holding tanks for uses in other industries.

The extent of the **gas wells** are drilled to a depth of between 550m – 1100m and are securely installed in steel casings and cement grouting. For an individual well, drilling can be done at a depth of 1100m then turned horizontally/ laterally and drilled for a further 1000m – 1500m in all directions, thus reducing the number of individual wells being required. The initial footprint is less than 100m x 100m however this is reduced to approximately 25m x 25m once the well is producing and remains so for the life of the well. This area is constantly being reviewed to become smaller as technology advances. Also land cleared for gas/water pipelines are kept to a minimum by the use of existing roads (where possible). These pipelines are at a regulated depth of 1.5m and can be driven over with any type of vehicle. From our observations the overall ***aboveground*** disturbance is extremely minimal and will have little impact on our industry.

The **Wilga Park Power Station** - Two generators are powered by 2 x 20 cylinder gas-powered motors and the electricity is put back into the power grid. In the future the Company plans to expand the operation to include 10 gas-powered motors and generators. Santos is presently exploring additional uses for the gas being produced to benefit local industrial and business users.

In conclusion we know we can't stop coal seam gas exploration so the best outcome for our industry is to work with Santos to achieve the best results for both parties. As a result of this meeting many misconceptions regarding CSG production were clarified. It was also very worthwhile as it opened up communication lines should any unforeseen issues arise in the future.

Casey Cooper & Rob Michie

APITHOR

ADVERTORIAL

The revolutionary product that eliminates small hive beetle, without harming the hive.

For over a decade Ensystex Australasia Pty Ltd has been creating products for the pest control industry. Ensystex's 'APITHOR Hive Beetle Harbourage' is the simple and effective way to save your hives from the damaging effects of the small hive beetle. In fact APITHOR has already successfully protected more than sixty thousand hives in Australia! Users of APITHOR report great success with treated hives showing improved health and vitality and increased honey production.

Ensystex's exclusive licence to commercialise the Hive Beetle Harbourage saw the development of APITHOR; the proven, safe and highly efficient way of controlling beetles in the hive. This development was based on three equally important cornerstones:

- Safety to bees and bee products
- Selection of an insecticide that combines excellent toxicity to beetles with favourable physicochemical attributes for in-hive use.
- A delivery system that takes advantages of the beetle's behavioural vulnerabilities

The small hive beetle is a shy insect that harbours in cracks and crevices in preference to remaining in the open. In the hive it is subject to harassment by bees so this habit can be exploited by providing a 'safe' haven in a lethal harbourage.

Core-fluted corrugated cardboard is an excellent substrate for insecticide impregnation and also provides an ideal refuge for the beetles. The cardboard is subject to attack by bees which in turn are vulnerable to the insecticide, so a two-piece rigid plastic protective housing was developed. The device is tamperproof and prevents operator or bee contact with the insecticidal insert. Size differential prevents bees from entering whereas beetles enter easily.

Ensystex's APITHOR is designed as a single use, disposable device that can be easily inserted and removed from standard hives without the need to open or dismantle them. It is actively sought out by the target pest without the need to include attractants or baits.

Designed for convenience, practicality and now available in smaller pack sizes, the Harbourage unit is placed onto the hive bottom board so that it sits flat with a thin wire attached to one or both holes provided to enable removal from the hives without opening or removing the hive's frames.

While APITHOR's effects are deadly for the hive beetle, your hive and honey production will be unharmed. A honey residue trial conducted according to Australian Pesticides and Veterinary Medicines Authority (APVMA) Guideline 28 Residues in Honey demonstrated that use of the device showed no fipronil residues in honey at a detection level of less than 1 ppb.

Results of efficacy trials conducted under an APVMA Permit indicated that deployment of a single harbourage on the bottom board of infested hives achieved a **100% reduction** in the number of live adult beetles within six weeks.

For more information on APITHOR Hive Beetle Harbourage visit www.apithor.com.au or contact Ensystex on 13 35 36.

CCD - NOT SO SIMPLE

East and West Differences, plus Virus and Disease Differences
CCD - not as simple as we hoped.....

Kim Kaplan, Chief, Special Projects Information Staff
Agricultural Research Service
US Department Agriculture (USDA)

Honey bees that succumb to Colony Collapse Disorder (CCD) carry a colony-specific group of three or four pathogens that tend to be unique to different geographic regions, according to a new study by Agricultural Research Service (ARS) scientists.

The paper, published in PLoSOne, is available online at: http://dx.plos.org/10.1371/journal.pone.0043562

The most distinct difference in the makeup of the pathogen clusters was found between CCD-struck colonies in the eastern and western United States. In samples from eastern apiaries, the grouping tended to be all viruses. In the west, it was a mix of viruses and *Nosema* species, which are gut parasites.

Specifically, *Nosema apis* and acute bee paralysis virus (ABPV) were linked with CCD colonies from western states, while these species were extremely rare in eastern honey bee colonies regardless of the presence of CCD.

Interestingly, collapsing colonies also differed overall from each other in the predominant pathogens, suggesting that these pathogens were lucky hitchhikers on the path to colony ruin, without any single factor being a consistent cause of collapse.

The largest single class of pathogens found in hives with CCD was RNA viruses, which are very small viruses associated with the mitochondria of host cells.

Each pathogen was present in some healthy colonies, but not at the levels found in CCD-struck colonies. The study confirmed an earlier finding, based on a small number of samples, that honey bee colonies showing CCD symptoms had significantly higher pathogen levels than colonies from apiaries that reported no CCD.

An association of RNA viruses and *Nosema* with CCD has been previously reported after studies of a small number of colonies, but this was the largest analysis of honey bee hives yet conducted. The study describes genetic traits for several novel RNA viruses, and for other microbes associated with the hives that might have positive or negative effects on bee health.

More than 100 hives from nine states—California, Florida, Pennsylvania, Maryland, Nebraska, New York, South Dakota, Wisconsin and Washington—were sampled between 2004 and 2008 and then analyzed for this study.

The geographic differences also indicate that it is unlikely that any single recognized agent is responsible for CCD, making the search for unifying predictors more complicated, according to ARS entomologist Jay Evans at the agency's Bee Research Laboratory in Beltsville, Md. Evans co-led the study with ARS research associate Scott Cornman, and with help from colleagues Jeff Pettis and Judy Chen at the Beltsville lab. Researchers from the University of Maryland and North Carolina State University were also part of the team, which received support from ARS and the National Honey Board.

ARS is the US Department of Agriculture's chief intramural scientific research agency.

POLLEN IN HONEY?

European Commission - Brussels - 21 September 2012

Commission proposals seeking to amend the current honey legislation (Council Directive 2001/110) – defining pollen as a natural constituent of honey & not as an ingredient & thereby exempting honey from complex labelling rules – were tabled by the Commission today *[see AF65-12]*.

The amended proposals seek to address last September's ECJ judgement that ruled that honey containing pollen derived from Genetically Modified crops cannot be marketed in the EU without prior authorisation *[see AF69-11]*. DG SANCO sources point out that the ECJ based its interpretation on the honey directive & in the absence of precision "mis-classified" pollen as an ingredient i.e. an element added to the product by the beekeeper.

Today's proposal aims to clarify that pollen is a natural constituent, entering the hive as a result of bee activity & therefore the compulsory requirement to mention the list of ingredients need not apply. But the Commission proposal does not call into question the ECJ's conclusions that honey containing GM pollen can only be marketed, if the relevant GM event is authorised under EU legislation.

Sources were quick to point out that the 'zero tolerance' approach remains in place for pollen derived from non-authorised GM crops (particularly for imports) & labelling rules on GMOs in food i.e. 0.9% threshold would also be applicable. **But given that the pollen content in honey is a mere 0.5%, even with 100% "contamination" of pollen derived from the authorised GM maize *MON810*, there would be no need for GM-labelling as it would still be below the 0.9% threshold, sources add.**

Last autumn, the Court judgment sparked fears of honey shortages as the EU produces around 200 000 tonnes per year, but has to import a further 148 000t to satisfy demand *[see table above]*. Sources indicated today that countries such as Argentina & Canada are taking the appropriate measures to ensure that there are no traces of non-authorised GMOs in honey consignments entering the EU.

But it remains to be seen if China & the other countries listed above will follow suit, with environmentalists questioning the capacity of current testing methods to detect minute traces of "GM pollen" derived from non-authorised biotech crops in import consignments. This co-decision dossier will now be sent to the EP & Council for further discussion.

SICK BEES

by Randy Oliver - ScientificBeekeeping.com
First published in American Bee Journal April 2011

PART 10

PARASITE MONITORING

Figure 1. At moderate temperatures, petroleum jelly (Vaseline®) serves as an excellent adhesive for stickyboards. It is most easily applied with a mini paint roller. The actual boards can be made from rigid plastic sheets, corrugated plastic signboard, or white plastic or laminated Masonite® panel board. Petroleum jelly doesn't get moldy or gummy, and can be easily cleaned off with a windshield ice scraper, and then renewed.

Last month I was presumptuous enough to try to boil successful beekeeping down to four basic rules. Giving the bees a dry home with plenty of honey is pretty obvious, so I'm going to make the other three easy to remember. Think of them as the "Three P's"—Protein, Parasites, and Pesticides (including miticide buildup). Parasite management centers around keeping an eye on varroa and nosema levels. In this article, I'll focus on monitoring the mite.

I'm typing this article in the home of my beekeeper hosts Graham and Valerie Gammell in Auckland, New Zealand, prior to speaking at their national conference. Kiwi beekeepers are entering Phase Two of "Life with Varroa"—the development of mite resistance to fluvalinate. Tragically, despite many of them being top-notch beekeepers, some are already suffering from unexpected colony losses, as did beekeepers in Europe and the Americas when that Silver Bullet lost its magical power. The reason for being blindsided is due to their unquestioning faith in by-the-calendar treatments with a synthetic miticide, without verification of its continued efficacy by the monitoring of actual mite levels in their hives.

I've previously explored methods for monitoring the degree of mite infestation in IPM 4: Reconnaissance (www.ScientificBeekeeping.com). It's been over four years since I wrote that piece, and it's time for some updates. Most of the information has not changed, but I'd like to revise my assessment of mite monitoring methods, and to introduce you to my current favorite--the alcohol wash in a "mite shaker jar." In my humble opinion, any monitoring method should be quick, simple, easy, inexpensive, reasonably accurate, and not involve counting above the number of fingers on your hands.

Stickyboards

Natural mite drop is a time-proven method for varroa monitoring, with the main advantage of being noninvasive.

Mite assessment via natural mite drop on stickyboards does, however, have several drawbacks:

1. It is only reliable when done repeatedly over time in order to detect trends, as it can vary greatly day to day,
2. It requires either screened bottoms, or clear beespace under the frames for both the board and the protective screen (to keep the bees from removing the mites),
3. It must be protected from ants (which may also carry off mites),
4. It requires two trips to the hive for a single reading (a big problem with multiple out yards), and doesn't give meaningful results for at least several days,
5. The actual counting of mites is tedious, time-consuming, and late season thresholds require counting up to at least twenty. Moreover, it is difficult for older eyes to pick out the mites from the hive trash (Fig. 2).

Figure 2. A close up of a typical 48-hr stickyboard from a colony with a high mite load. Hive trash and wax worm droppings can make the mites difficult to differentiate (there are about 25 in this photo).

Accelerated Mite Drop

The natural mite drop can be greatly accelerated by any fast-acting miticide or mite repellent, such as formic or

oxalic acid, amitraz (while it is still effective), essential oils, or powdered sugar dusting. Such a monitoring method has the advantage in that you are causing the drop of a proportion of the mites from the entire hive, rather than from only a small sample of bees.

The Sugar Shake
A popular sampling method is to roll a half cup of bees (approx. 300 bees) in a jar with a tablespoon or so of powdered sugar, and then to shake the mites out through a screened lid (see photos in "Reconnaissance"). This method is wonderful for a few samples, but is time consuming and brutal on your arm for multiple samples.

The Alcohol Wash
Ah, and now we get to my current favorite sampling method! It meets all my criteria for simplicity and quickness in the field, requires a minimal amount of equipment, and does not require sharp eyes nor much counting. Best of all, the alcohol wash gives an immediate and suitably accurate assessment of mite levels in a yard within a few minutes.

Many in the research community have gone to using the alcohol wash of 300 bees from the broodnest as their standard method of mite assessment. The suitability of the alcohol wash is supported by extensive sampling and statistical analysis by Katie Lee for her doctoral research (Lee 2011).

Which Bees to Sample
A number of researchers have found that mite levels are highest on nurse bees (Pernal 2005). However, Lee found that "bees on frames containing brood comb had significantly more mites than frames without brood, but the difference is small biologically." She suggests: "for convenience, and to increase sampling precision and chance of detecting mites when they are rare, we recommend beekeepers take a single … sample of 300 adult bees from any frame in the uppermost brood box. ... The present research confirms statistically that this recommendation will yield adequate precision."

I tested this recommendation by taking half-cup (roughly 300 bee) samples from eight different frames from the same colony. That very limited test supported Lee's conclusion (Fig. 3).

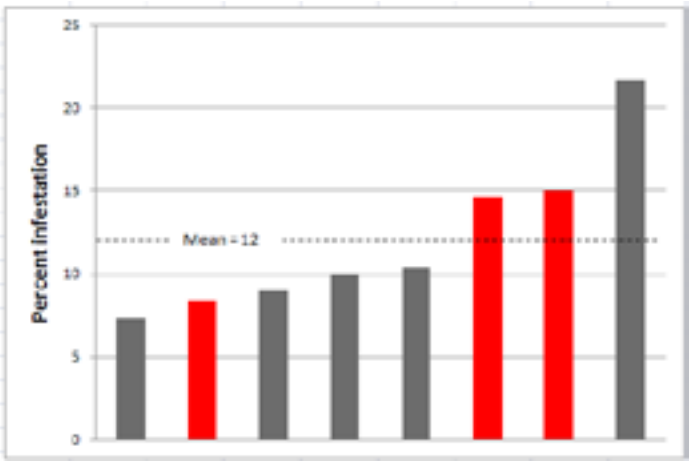

Figure 3. Mite levels from half-cup bee samples from 8 different frames in the same hive. Levels for the 3 sampled brood frames are in red (the graph is not in the actual order of the frames). Note that mite infestation estimates ranged from 7 – 22%. Although the differences are significant at this high infestation level, proportionally they would mostly be within a point or two at typical threshold levels.

I was also curious as to whether one could estimate mite levels from samples of bees taken from the entrances of hives for the purpose of determining nosema infection levels. So I took matched samples from both the entrance and a brood frame from 15 different colonies, and compared the mite infestation levels on the bees. There was virtually no correlation (Fig. 4), so I'd stick to broodnest samples.

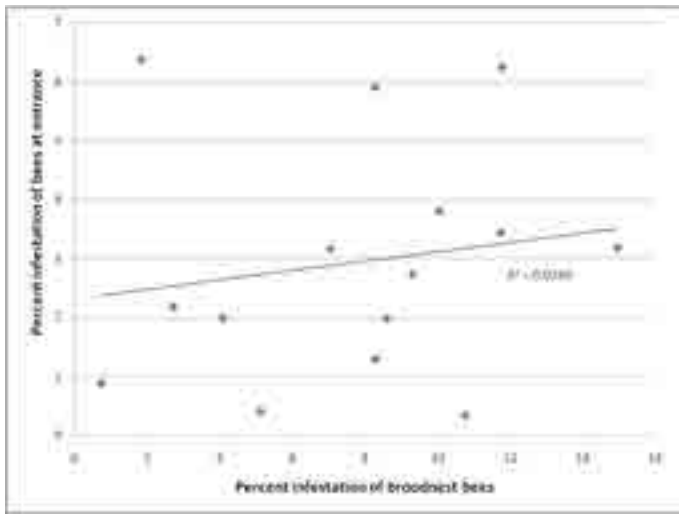

Figure 4. Comparison of mite infestation levels of bees taken from the broodnest vs. those taken from the entrance. There is little correlation, so don't use entrance samples to estimate mite infestation levels.

Dr. Lee also found that the proportion of mites in either drone or worker brood varied greatly (pers. comm.), but that on the average, about half the mites in a hive at any time would be in the brood, with the proportion being higher if there were a great deal of brood, and down to zero if there was no brood.

Practical Tip: For practical purposes, beekeepers can make mite management decisions based simply upon the infestation rate of a sample of ½ cup of adult bees taken from a frame from the upper brood box.

Taking the Sample
With the right equipment and a bit of practice, the alcohol wash takes only about two minutes per hive. There are a number of tips and tricks involved, and in this case a picture is worth a thousand words. So I've made a photo essay of the technique.

Step 1
Pull out a brood frame from middle of the cluster in the upper brood box. It does not appear to be all that critical that the frame actually contains brood.

Step 2
Make sure that the queen is not on the frame! The one drawback to this method is that you must sacrifice 300 bees (and you don't want one of them to be the queen).

I don't like killing bees any more than anyone else, but to me the sacrifice of a few bees in order to prevent the death of a million bees in a yard is akin to taking a blood sample (or mowing your lawn). Disclaimer: to avoid eye injury, you should always wear a veil when working bees!

Step 3
if you see the queen, either remove her, or sample another frame. I like it when I see the queen (which is quite often when I take the frame from the center of the cluster), since I am then home free!

Step 4
Shake the frame to dislodge the bees into a tub. Tip: the technique for shaking is to make the frame bang down-up-down sharply and hard between your loosely-held thumb and middle finger, making sure that your thumb never clamps down (which would cause the bottom of the frame to swing wildly).

Alternately, you can hold the frame vertically, and bang the ear against the bottom of the tub (the tub would need to be on a hard surface so that you don't punch a hole through it!).

Step 5
Allow the older bees (which carry fewer mites) a few seconds to fly off. If you hadn't already confirmed that the queen is not in the sample, she is easy to spot at this moment.

Step 6
Shake the bees into one side of the tub and use a ½ cup (120 ml) measuring cup to scoop up the bees, then shake them off dead level. If nectar is shaking from the frame, making the bees sticky, then hold the cup below the bees, and jiggle the tub to fill the cup.

Tips: use a stainless steel cup that measures ½ cup to the rim, and a white Rubbermaid® dishwashing tub. The curve of the Rubbermaid brand tub corners exactly matches that of the cup, making for easier scooping. Dump the bees into a wide mouth pint jar of alcohol.

Step 7 (Option A)
Use a round bottom white bowl with a kitchen sieve that fits it closely. Fill the bowl with rubbing alcohol so that it is at least two inches deep in the sieve. Dump in the jar of bees and stir and shake them vigorously to dislodge the mites. Keep washing until no more mites fall off.

Step 8
Lift the sieve and count the number of mites. It helps to pour off the excess alcohol for better visibility.

The sieve and bowl work fine, but for taking multiple samples in the field, a "mite shaker" jar is a big improvement. There's a photo of my prototype at "Reconnaissance," but Dr. Medhat Nasr designed one that is a great improvement. It is available for purchase in Canada, but I have not yet seen it offered in the US. So I'll show you how to fabricate one yourself!

Take two plastic peanut butter jars (plastic jars are much lighter weight for shaking). Make sure that the bottoms are molded smoothly so that it will be easy to view mites. Empty the jars. Tip: I was eating peanut butter and honey sandwiches until I thought that I was going to puke, when my wife suggested that I simply transfer the peanut butter to another container! Soak off the labels and carefully scrape the safety seal off of the jar rims so that you get an alcohol-tight seal against the lids.

Use a tomato paste can with both ends removed, heated in a flame until red hot at the edge, to melt a hole through the center of each lid. Use a clamp to hold the can, and have a responsible adult help you, since there is an element of danger involved.

Cut out a circle of 1/8" hardware cloth to fit inside the rim.

The lids are made from polypropylene, to which virtually no glue will stick (I tried several, including polyolefin hot glue—all failed when soaked in alcohol). Luckily, polypropylene can be easily heat welded with an ordinary soldering gun. Make sure that you get a good, deep weld, as the weld may crack with use (but is easily repaired by re-welding). You probably shouldn't hold it against your belly as I am doing!

Here is the final mite monitoring kit--compact and field ready. It includes a fine kitchen sieve, so that the penny-pinching beekeeper (me) can reuse the alcohol. For additional savings, I cut the 70% alcohol in half with water (be sure to relabel the bottle). Some suggest using windshield washer fluid, but I find that it foams too much, and lacks the clarity of plain rubbing alcohol. In a pinch, you can also use water with granulated dishwashing detergent.

Step 7 (Option B)
Fill one jar about 2/3rds full of alcohol, and pour the bees into it (OK, I'm really pinching pennies here with reused alcohol).

Step 8
Screw the lid and upper jar on top.

Step 9
Invert the shaker so that the bees are in the upper jar. Shake vigorously for twenty seconds, then after the last up shake jiggle the jar as the alcohol drains through the bees. If you don't jiggle, some of the mites get stuck in the bees from time to time (I've tested).

Step 10
Look up through the bottom of the jar. It takes about 30 seconds for all the mites to sink to the bottom, depending upon the swirl. Adjust the view so that the sun illuminates the mites clearly. If you've shaken vigorously enough, you will generally see a dislodged bee stinger or two. Test the efficiency of your initial shakes by repeating with fresh alcohol to see whether you recover any additional mites—you shouldn't!

Step 11
Count the mites. There are 16 in this sample of 300 bees, which you divide by 3 to get percent infestation (mites per 100 bees)—in this case, slightly over 5%. I treat at anything over 6 mites during summer (2%), so no need to count any higher. Surprisingly, I often see light-colored mites.

Holy cow! Too many mites--approximately 72, or a 24% infestation! This colony (not one of mine, thank God) is in the severe danger zone. (Note the stinger at the far upper left).

Step 12
Discard the bees and filter the alcohol for reuse. Make sure that you check the emptied jar for residual mites (I just pour a bit of alcohol back in, swirl, and dump). Tip for commercial beekeepers: Make two shaker jars, so that one can be settling on top of a hive while you start taking a sample in the next one!

Suggestions
Get into the habit of carrying the shaker kit with you all the time. Check a few hives in each yard throughout the season so that you always have a good idea as to how fast the mite infestation level is building up. Always having a handle on your mite levels will help to keep you from being surprised, and give you a heads up in advance of problems.

I will revisit treatment thresholds in my next article, but briefly, I'm concerned with more than 1 mite per sample after almonds, try to keep levels below 6 mites during the season, and lower in fall (I allow no more than one mite in a sample for a breeder queen).

If the first wash in a yard is above threshold, simply treat the yard. But if the first sample is low, then test more hives to confirm that the first one wasn't a fluke. Katie Lee found that the mean mite infestation level of a yard could be estimated with reasonable accuracy by taking samples from eight different colonies, so probably no need to sample more than that many hives.

I will post this article to ScientificBeekeeping.com so that you can view the photos in more detail. Next edition, Mite Management Strategies.

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"These articles were originally published in the American Bee Journal. All of Randy's bee articles may be found at: www.Scientificbeekeeping.com
If you find these articles of use, Randy appreciates donations to fund his efforts."

RECIPES

CHICKEN TENDERS WITH HONEY MUSTARD DIPPING SAUCE

1/3 cup (50g) plain flour
2 eggs, beaten
2 1/2 cups (175g) stale breadcrumbs
1kg chicken tenderloins pieces
Vegetable oil for frying

Honey Mustard Dipping Sauce
1/2 cup (150g) whole egg mayonnaise
1 tablespoon Dijon mustard
1 tablespoon wholegrain mustard
1/4 cup (90g) honey
2 tablespoons lemon juice

Combine the mayonnaise, mustards, honey and lemon. Season to taste with salt and pepper.

Place flour in a shallow bowl; season with salt. Combine beaten eggs with a tablespoon of water in a second bowl. Place the breadcrumbs in a third bowl.

Dip each piece of chicken into the flour, then the egg, then the crumb mixture, pressing the crumbs gently so they stick.

Shallow-fry chicken in a large frying pan over medium heat until golden brown on both sides and cooked throughout. (Don't overcrowd the pan - cook in 2 or 3 batches if necessary.)

Serve with Honey Mustard Dipping Sauce.

DATE, CARROT & HONEY LOAF

1 1/2 cups dates, pitted and chopped
1 cup honey
1 cup water
60g butter, chopped
1 teaspoon vanilla extract
2 cups self-raising flour, sifted
1/2 cup carrot, grated

Preheat oven to moderate, 180°C. Lightly grease and line a 10cm x 20cm loaf pan with baking paper.

Place dates, honey and water in a medium saucepan. Stir constantly over medium heat 2-3 minutes, until dates soften. Stir in butter. Remove from heat. Blend in vanilla.

Fold in flour and carrot. Pour into pan, smoothing top.

Bake 35-40 minutes, until cooked when tested with a skewer.

Cool in pan 5 minutes. Turn onto a wire rack to cool completely.

Serve sliced, drizzled with extra honey.

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Executive Director: Mr Stephen Ware

The following is an update of recent activities of AHBIC. If you should seek further clarification please do not hesitate to contact the AHBIC office.

AHBIC NEWS - September 2012

Dear Beekeeper

RE: Request for Funding
AHBIC is proud to be industry's peak representative organisation, a role it has played since it was formed in 1998 with many major initiatives achieved. Following the 2010 AHBIC Annual General Meeting it was recognised that AHBIC needs to increase its support and funding base to include all beekeepers and this is the purpose of this letter.

As we progress in the new millennium it is obvious that the beekeeping industry faces enormous challenges including:

- Potential disease and pest incursions (Varroa, *Apis cerana* etc.);
- The continuation of an effective quarantine station;
- Effective industry disease control programmes
- Market access for Australian bee products;
- Increased profitability for beekeepers generally;
- National Park access and many more issues including resource security

To undertake the above activities industry needs resources to operate. The last year has seen enormous change both for the Association and for the Australian economy as a whole. As the rate of change increases it will be more important than ever to keep AHBIC's viability growing to ensure that it can represent you at the highest level. Otherwise we will simply have to respond to change as it is imposed on us, instead of our interests as a crucial industry to pollination being taken into consideration.

Industry, in the last 12 months and into the future, continues to deal with a myriad of issues including:

- The Apis cerana incursion in Queensland – if spread this bee will reduce honey production and increase pollination costs. A transition plan is currently being implemented.
- Trade issues continue to be an ongoing area of concern and are being vigorously pursued.
- Contamination issues continue to be a major concern to our industry (PDBs, GMO's and Pas that are ever present threat).

I can assure you for a small organisation AHBIC is performing well above its weight on a large number of sensitive issues. These above issues have the potential to impact on every beekeeper and AHBIC is seeking to raise $500,000 to protect your industry.

For your own beekeeping interest I would ask you to get behind your national association and fight together for this industry we all hold dear and consider sending a voluntary levy to your national body.

Yours sincerely

Lindsay Bourke
Chairman

✂ _____

AUSTRALIAN HONEY BEE INDUSTRY COUNCIL

PO Box R838, Royal Exchange NSW 1225
ABN 63 939 614 424
Phone (02) 9221 0911 Fax: (02) 9221 0922
Email: ahbic@honeybee.org.au

TAX INVOICE/RECEIPT

Yes I wish to support my industry and attach:

☐ Up to 50 hives = $50.00
☐ 51 and over hives = $1.00 per hive

PAYMENT OPTIONS

CHEQUE $ .....

DIRECT DEPOSIT:
Account: Australian Honey Bee Industry Council
Bank: Commonwealth Bank, Maroubra Junction, NSW.
BSB: 062 198 Account No.1022 2090

***** Please quote name as reference on statement *****

I would like to receive the AHBIC Annual Report ☐

Name: …….....

Email: …….....……..

Address: .....

☐ Yes, please publicise my name on the front of the newsletter

✂ _____

UPDATE AHBIC ACTIVITIES

The following is a brief summary of outcomes and initiatives taken in the last month:

- Submissions have now been made to parliamentary enquiry in NSW on Public Land Use. Apart from the submission AHBIC has also offered to appear before the enquiry.
- AHBIC among others has continually requested Government to look at the impact of neonicotinoids on bees and at last APVMA have announced they will review the issue.
- A number of meeting are/have been scheduled/continued this month and include:
  - Animal Health Australia
  - Food Safety and Residue Committee
  - B-Qual Australia
  - AHBIC Executive
- Submissions have also been made on the following subject areas:
  - The Chinese Honey Standard
  - GMO's
  - Australian Honey Standards

APVMA TO REVIEW SCIENCE ON PESTICIDES AND BEE HEALTH

Concerns in Europe and the USA about the potential for insecticides to impact on the health of honey bees and other insect pollinators have created some anxiety among Australian beekeepers who have noted that many of the neonicotinoids used overseas are also used here. Of particular interest is whether a particular class of insecticides, the neonicotinoids, might have sub-lethal effects on bees, which may reduce their ability to pollinate plants and produce honey.

Accordingly, the APVMA has commenced an investigation of the scientific literature to determine whether:

- use of neonicotinoids in Australia presents any more of a risk to honey bee health than other pesticides that have been in use for many years
- current APVMA data requirements for testing of insecticides are adequate to address any potential effects of neonicotinoids on bees.

Outcomes of our investigation will be published by early 2013.

Importantly Canadian authorities have likewise agreed to investigate and we reproduce the following article from Hive of the Canadian Honey Council.

SEARCHING FOR ANSWERS TO HONEY BEE POISONING!

After devastating hive loss due to acute poisoning symptoms, Ontario bee keepers were relieved to hear of Health Canada's decision to re-evaluate neonicotinoid insecticides.

Given the high number of reports of acute poisoning, and with lab results indicating the presence of Clothiandin, Ontario Beekeepers are pleases with Health Canada's initiative to re-evaluate nitro-guanidine neonicotinoid insecticides and associated products.

Over the last six weeks, reports have been received throughout South-western Ontario of honey bee poisoning. Symptoms ranged from unusually high numbers of dead or dying honeybees in front of hives to complete bee yards being depopulated.

With these numerous reports being received the Ontario Beekeepers Association (OBA) executive contacted various government agencies and chemical companies to ensure their awareness and involvement. Professional testing and research is being provided on the poisoning.

The OBA-Technology Transfer Program is working with these agencies to ensure all pertinent data and samples are available. Beekeepers are searching for answers.

Nitro-guanidine neonicotinoid is widely used in agriculture, including soil applications, seed treatments, as well as foliar and greenhouse uses. OBA recognises thanitroguanidinet neonicotinoid are widely used by agriculture neighbours.

As stated by OBA President, Mr John Van Alten, "we want a workable solution for all our partners in agriculture, but not at the expense of pollinators. We need to ensure that non target insects are not negatively affected by the use of these chemicals."

The Ontario's Beekeepers Association, established in 1881, is one of the oldest established farm organisations in Ontario. It is incorporated under the Agricultural and Horticultural Organisations Act (1987). The OBA's mission is to ensure a thriving and sustainable beekeeping industry in Ontario.

DAFF-NOTIFICATION OF IMPORTATION OF QUEEN HONEY BEES: FINAL POLICY REVIEW

DAFF had advised that Animal Biosecurity Branch have released the DAFF Biosecurity Advice 2012/19 '*Importation of queen honey bees: Final policy review'.*

The document is at the following web address:
http://www.daff.gov.au/ba/reviews/final-animal/honeybees/ba2012-19-final-review-importation-queenhoneybees

Overview:
This review assessed the biosecurity risks to Australia of the importation of queen honey bees (*Apis mellifera*, the European or western honey bee). All disease agents, pests and species of concern were assessed, including those that have emerged since the original policy for the importation of honey bees was developed in the 1990s. It provides risk management options to reduce identified risks to a level consistent with Australia's appropriate level of protection (ALOP).

A draft review of the import policy for queen honey bees was released on 29 February 2012 for 60 days stakeholder comment. This was extended to 14 May 2012 (at the request of stakeholders). The department has considered the submissions received from stakeholders and accepted a number of proposed amendments.

The final policy requires that importation be restricted, in the first instance, to countries that can provide a satisfactory level of assurance for certifying to Australia's biosecurity requirements for queen honey bees - Canada, the European Union, Japan, New Zealand and the United States.

The final policy also requires that upon arrival in Australia all imported honey bees undergo post-arrival quarantine in a government-approved quarantine facility where a colony derived from imported honey bees will be propagated. The larvae grafted from this colony will be the only genetic material released from quarantine. This will be at the existing Eastern Creek quarantine station until the new bee quarantine facility in Victoria is commissioned.

Key Issues:
DAFF recognises that there is demand for imported genetic material to improve the productive and disease resistance qualities of local honey bee colonies.

Australia remains free of some major honey bee pests and diseases including varroa mite and the so called "killer bee"—the Africanised honey bee, *Apis mellifera scutellata*, and its hybrids.

In February 2006, importation from the United States was suspended because of the inability to determine whether honey bees from that country contained genes from the Africanised honey bee.

Queen honey bee imports from all sources were suspended in August 2008 over concerns with honey bee colony losses in several countries attributed to the 'colony collapse disorder' syndrome. The review concluded that this syndrome is not of biosecurity concern.

ILLEGAL SUPPLY OF PRODUCTS CONTAINING PARADICHLOROBENZENE (PDB, PCB)

Supplying and using unregistered products containing Paradichlorobenzene (PDB, PCB) may lead to PDB residues in honey. Residue detections may compromise Australia's trade with other countries.

No products containing PDB are registered by the APVMA for supply in Australia for use in the honey bee industry. Retailers selling products containing PDB for use in hives to control pests such as moths are supplying unregistered products and are in breach of the Agvet Code.It is an offence under the Agvet Code to supply unregistered chemical products and monetary penalties apply.

The APVMA encourages public and industry members to submit information on any suspected breaches of the Agvet Code. Such reports will then be treated in accordance with the Compliance Program Operating Principals which can be found on the APVMA website www.apvma.gov.au.

Background: The Australian Pesticides and Veterinary Medicines Authority (APVMA) is a national regulator of agricultural and veterinary chemical products. A product requires registration by the APVMA if it being supplied for a purpose that fits the definition of an agricultural chemical product in the Agricultural and Veterinary Chemicals Code Act 1994 (Agvet Code).

By law you can only supply *registered* agricultural and veterinary chemical products in Australia.

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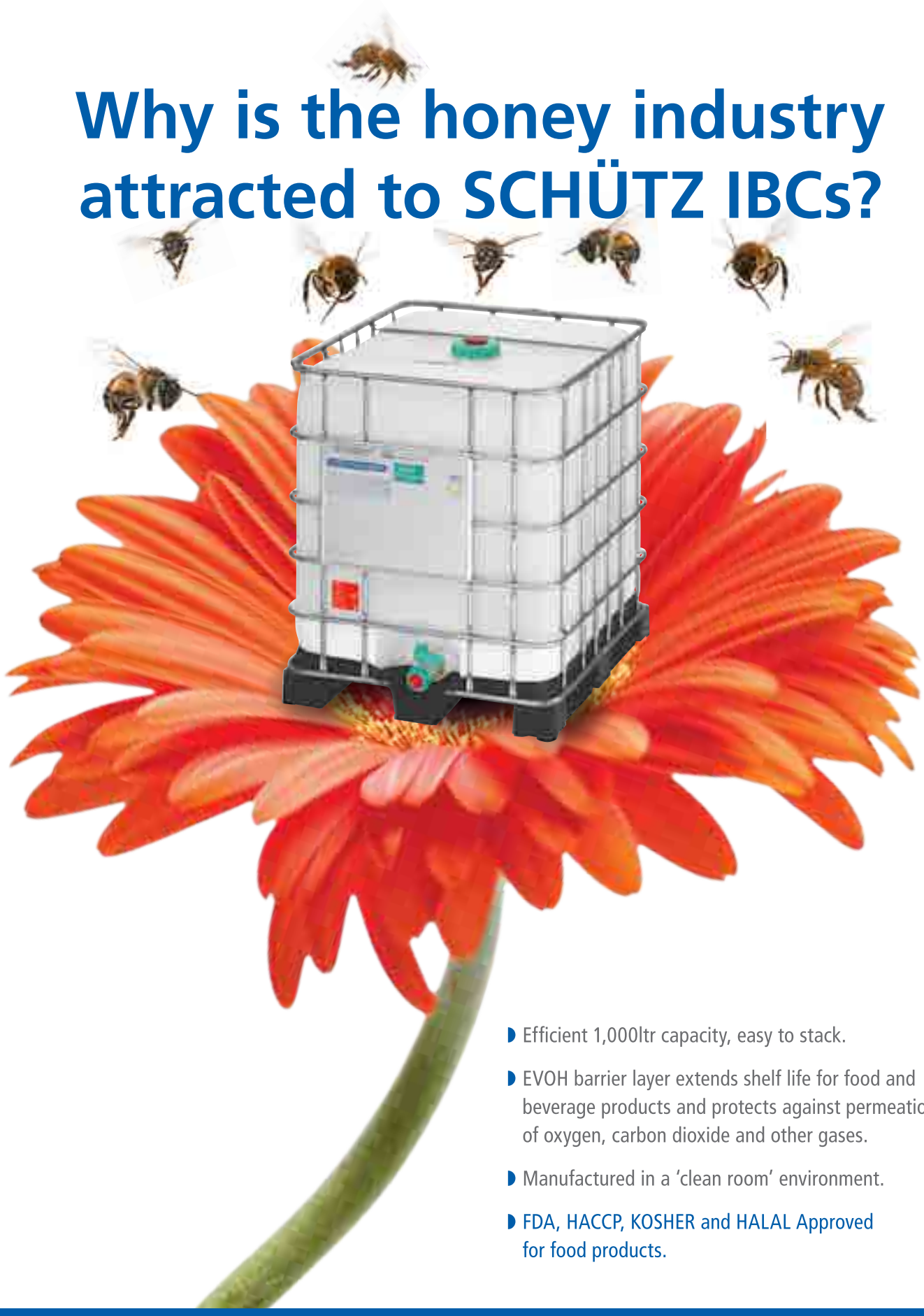

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