Volume 13 No. 1

February 2005

The New Zealand BeeKeeper

Permit Post
Wellington, N.Z.
Permit No. 154506

Pollen Nation at last!

A range of crops grown in Canterbury during the 2005 season.

IN THIS ISSUE:

ISSN 0110-63325
The Official Journal of The National Beekeepers' Association of New Zealand Inc.

Published by Crown Kerr Printing
P.O. Box 5002
Dunedin, New Zealand

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NZ Beekeeper Printed & Published by:
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President's Report

And so a new year has begun. For the Executive, it is already shaping up to be a very busy one, particularly in respect of submissions required and working with the New Zealand Food Safety Authority. I have outlined the submissions and their due dates below, as we will be approaching many of you to assist us with the process.

Also of significance will be the restructuring of our organisation, as we have had nothing but positive responses to the restructure proposal. I look forward to seeing this proposal move forward as it will take some pressure off the Executive. Members will need to be aware that a more professional approach to the running of the organisation will come at a cost, and that we must be willing and prepared to fund this change.

Good progress is being made on the running of the American Foulbrood National Pest Management Strategy (AFB NPMS), with many of the branches either having carried out an audit in spring or about to conduct one in autumn. It is good to hear that at least one of these audits has found no cases of AFB. The Executive sees it as vital that we continue towards our goal of eradication of AFB from our beehives in New Zealand. It is most important that beekeepers are forever vigilant for the symptoms of this disease. The cost of losses due to having to destroy AFB-infected hives, plus the losses incurred by the presence of varroa are often hard to handle, but there may be one small positive effect of the presence of varroa — it gets rid of the feral colonies that may harbour AFB, and it gets rid of the unmanaged hives owned by beekeepers. I believe that having a goal of eradication will benefit the industry in the long term.

A couple of meetings are coming up that will have occurred by the time this edition has gone to press; however, I feel it is appropriate to keep people informed as to what the Executive has been doing on your behalf.

On 3 February, a meeting is being held in Dunedin with regards to bee and bee product research and funding. As of mid-January very little has been communicated to us other than having been invited to attend. I will be keen to learn more of what is being proposed, as I have always seen bee and bee product research to be vital to our industry survival and growth, particularly as the importation of bee products is a likely scenario in the near future.

On 16 February a representative from the NBA will be attending a workshop by AgriQuality on the Cape bee, Africanised bee and other bee diseases. *[Editor's note: see the article entitled 'Some other pests of honey bees of concern to New Zealand beekeepers' on page 6 of this issue, written by Murray Reid of AgriQuality.]*

Submissions

I bring to your attention five separate matters on which industry feedback is being sought by government agencies. These are:

1. Bee Products Official Assurance Guide (New Zealand Food Safety Authority)
2. Complementary medicines (Trans-Tasman Therapeutic Products Agency Project: three papers are up for discussion)
3. Domestic Food Review (New Zealand Food Safety Authority)
4. Import Risk Assessment: Honey Beehive Products (Biosecurity New Zealand/MAF)
5. Novel Foods P291 (Food Standards Australia New Zealand)

The deadlines for submissions on each of these initiatives are in February or March. I have provided more information on each below, with some additional comments.

New Zealand Food Safety Authority — Bee Products Official Assurance Guide

You will find the Official Assurance Guide on the NZFSA website: http://www.nzfsa.govt.nz/animalproducts/subject/bee-products/index.htm

Following is the text of the request for submissions prepared by NZFSA:

'Dear Stakeholder,

The NZFSA proposes to put in place the "Bee Products Official Assurances Guide", that together with the Official Assurances Programme, provides for a certification system specifically tailored to the bee products industry. The NZFSA are seeking feedback on the proposed Guide.

Attached is the "Bee Products Official Assurances Guide", and draft "Statement for the Transfer of Bee Products between Listed Establishments" for consultation. The current system of supporting export certification has been found deficient in a number of areas. To continue to provide export certification in which the certifier can have confidence, a national programme must be implemented that provides for

- Traceability of bee products back to their original source.
- Transfer of compliance information between operators.
- Identification of who those operators are.
- Operator documented systems describing the processes, inventory and traceability, such that the operator can demonstrate compliance with any applicable standards, as attested to on the certificate.
- Independent verification of the operators, and their documented systems.

The attached draft Guide brings together all these elements of a certification system. You are invited to make your own recommendations for changes, or to make submissions on the proposed "Bee Products Official Assurances Guide" and draft "Statement for the Transfer of Bee Products between Listed Establishments" by: **5.00 pm, Friday, 18 February, 2005**.'

The guide outlines the necessity for Harvest Declarations from the beekeeper to be supplied, and that secondary processors will also be required to fill out forms (Operator declarations — Refer to Part 3 of the Official Assurance Programme) that transfer bee products between listed premises.

On reading this guide, it will also be useful to look at the section on the website as to how to obtain an Official Assurance. This section outlines that you must be a registered exporter. To obtain a official assurance you must apply to an

authorised person and meet several conditions in order to obtain your certificate for export.

Complementary Medicines

A public meeting will be held on 2 February in Auckland about proposed changes for complementary medicines, followed by a second meeting in Christchurch on 3 February. This may affect the sector of our industry that produces bee venom products, pollen supplements, and others who make medicinal claims about honey products. If you wish to find out more about this, look on the Trans-Tasman Therapeutic Products Agency Project website (http:/www.jtaproject.com).

Three consultation papers are up for discussion:

1. Proposed Regulatory Definitions for Complementary Medicines and Homoeopathic Medicines in a Joint Australia New Zealand Therapeutic Products Agency
2. Regulation of Herbal Substances in a Joint Australia New Zealand Therapeutic Products Agency
3. Regulation of Homoeopathic and Related Medicines in a Joint Australia New Zealand Therapeutic Products Agency.

At the time of writing, these consultation papers had not yet appeared on the website so I cannot give you any more information other than to look at the website, and that **submissions are due on Friday 11 March**. The Executive would like to hear from anyone who is involved with these types of products, so that we can get your reaction to the proposals and assist us to put together an industry viewpoint in a submission if it is deemed necessary for us to do so.

Domestic Food Review

The New Zealand Food Safety Authority (NZFSA) has supplied the following explanation:

'This review is Paper 5 in a Review of government involvement in the domestic food sector. The Review is a significant long-term project that is likely to run over at least five years. Its purpose is to put in place a food regulatory programme across all sectors of New Zealand's domestic food industry that promotes and delivers safe and suitable food in New Zealand. This is only the second time in the last 30 years that the government's role in the New Zealand domestic food sector has been critically examined at official level. The last review was undertaken in the late 1980s, and led to the Food Amendment Act 1996 and eventually the establishment of the New Zealand Food Safety Authority (NZFSA). This Paper proposes the principles to apply in cost recovery arrangements and the methods that could be applied. It has been developed by NZFSA in conjunction with groups representing Public Health Units (who are part of District Health Boards) and Territorial Authorities (as represented by Local Government New Zealand). The Paper includes an outline of current principles and methods. Other Papers in the series include:

Paper 1: Context

Paper 2: Regulatory roles, responsibilities and structures

Paper 3: Food Control Plans

Paper 4: Implementation of Food Control Plans.

At the end of public consultation on this and the other four Papers, NZFSA will analyse all submissions and provide policy advice to Government. Submissions are sought from interested people and organisations. A response form is provided, but submissions will be accepted in any format. The closing date for **submissions is 28 February 2005.**'

Submissions should be sent to:

Submissions - Domestic Food Review c/o Policy Group
New Zealand Food Safety Authority
PO Box 2835
WELLINGTON
Email: robbie.thomson@nzfsa.govt.nz
Fax: (04) 463 2501

The discussion document will be available on the NZFSA website: http://www.nzfsa.govt.nz/policy-law/projects/domestic-food-review/index.htm

Import Risk Assessment: Honey Beehive Products

Further information can be obtained on the MAF website: www.maf.govt.nz/biosecurity/consultation.htm, or by writing to the address below.

Submissions close on 28 February 2005 and should be forwarded to:

Martin Van Ginkel
Pre Clearance
Biosecurity New Zealand
Ministry of Agriculture and Forestry
PO Box 2526
Wellington

Email:vanginkelm@maf.govt.nz,or
Martin.van_Ginkel@maf.govt.nz

This Risk Assessment is extensive, and is the consultation document that we have been waiting for since the Nelson conference in 2003 where MAF had said that this risk assessment would be rewritten. As many of you will be aware, this has been a long, drawn-out process. Make sure you take the time to make a submission. In my opinion the persons who have written this Risk Assessment have made far too many assumptions that could ultimately prove to be our industry's downfall.

Once this Risk Assessment has been approved, MAF will then produce Import Health Standards when requests are made to import product. We will then get a chance to make submissions on these standards where the criteria are set out in order for the importation to occur.

It is extremely important that we look at these standards carefully and make sure that MAF is not putting undue risk on our industry and the New Zealand economy as a whole. If a mistake is made and EFB, Hive beetle, Tracheal mites or one of the many viruses enter the country, it will make it extremely difficult to keep bees and could result in hive numbers dropping to the point where insufficient colonies are available to carry out the pollination requirements for the horticulture and seed industries. These industries contribute significantly to the New Zealand economy and could be placed in jeopardy.

Novel Foods P291: Food Standards Australia New Zealand (FSANZ)

The last submission that has been bought to my attention is in relation to Novel Foods P291. **Submissions are due on 2 March 2005.** This may or may not affect the industry, but I bring it to readers' attention in case they are in the process of developing new products.

Once again people can obtain information on the FSANZ website:
http://www.foodstandards.gov.au/mediareleasespublications/mediareleases/mediareleases2004/fsanzmootschangestot2810.cfm

The following text has been quoted from the FSANZ website:

'Review of the novel food standard – Proposal P291 (Initial Assessment)

Novel foods are defined as a sub-set of non-traditional foods. Because they lack a history of safe use in the food supply in Australia and New Zealand, novel foods and novel food ingredients must undergo a risk-based safety assessment before they can be sold. FSANZ is reviewing Standard 1.5.1 – Novel Foods, in response to policy guidance received from the Ministerial Council.

The review will examine a number of issues, including the definitions for both 'non-traditional food' and 'novel food', the mechanism for making determinations as to novelty and the scope of the standard to include food produced using new technologies. A number of regulatory options are being put forward, including ways of amending the standard. FSANZ would like to hear the views of affected parties on the costs and benefits of the options.'

- Jane Lorimer

Deadline for Publications

March 2005 edition:	**20 February 2005**
April 2005 edition:	**22 March 2005**
May 2005 edition:	**21 April 2005**

All articles/letters/photos to be with the Editor via fax, email or post:

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Some other pests of honey bees of concern to New Zealand beekeepers

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Reading a list of bee diseases we have in New Zealand is pretty depressing. Reading a list of those we don't want here is enough to have you looking at ads for job vacancies. MAF has a register of unwanted organisms on their web site, which lists many of the world's beekeeping nasties, but not all by any means.
(http://www.maf.govt.nz/biosecurity/pests-diseases/registers-lists/unwanted-organisms/index.htm).

Following is a brief description of a few of the potential problem pests that could be of concern to New Zealand beekeepers if they ever established themselves here. While these species can be introduced, the odds of them establishing and becoming widespread are hopefully much less.

Toad (*Bufo marinus*)

This toad is usually called the cane toad because it was introduced into Australia, and other parts of the Pacific, to control insect pests in sugar cane fields or to control malaria-carrying mosquitoes. These toads are voracious eaters of honey bees and I have seen literally hundreds of them under beehive stands. Toads in an apiary have been reported to eat 100–500 bees per night[1], or the equivalent of a good colony per week.

The only practical way to protect hives from toads is to fence apiaries or to place hives on stands at least 500 mm off the ground. These stands must have pole-type legs as the toads are very good climbers: I have seen them climb up stands supported on concrete blocks and sit right at the hive entrances. They take plenty of stings from the bees on their tongues and around their eyes but they tolerate these in the interests of haute cuisine dining. Toads under beehives grow much bigger than those elsewhere. They will also climb on the backs of each other to get nearer hive entrances on stands. In an apiary in the Solomon Islands I once counted 12 toads stacked on top of each other. They are also very adept at catching bees on the wing, which can include queen bees.

The cane toad is not likely to establish and or become widespread in New Zealand, but if it did beekeepers would have to put up with having ugly poisonous amphibians underfoot in their apiaries. Beekeepers would also probably have to put all their hives on stands, with the associated problems of working hives high off the ground (plus the costs of the stands). Alternatively, apiaries may need to be fenced with low wire netting. Some beekeepers in Queensland were experimenting with spiked boards in front of hives as well as wire mesh fronts.

Figure 1: Cane toads attacking nuclei colonies in the Solomon Islands

Figure 2: Cane toads stacked up under hives

Red Imported Fire Ant (RIFA) (*Solenopsis invicta*)

A number of fire ants threaten New Zealand; some of these are regularly found around our ports and airports. The worst of these is perhaps the Red Imported Fire Ant, or RIFA[2]. RIFA spreads very easily and the main effect on New Zealand beekeepers would probably be the imposition of movement restrictions. Adequate movement controls must be in place if control or eradication is to be attempted. As an example, beehives moving from Texas to California for pollination originally introduced the ants into that state. RIFA then spread into a nursery, where they were distributed to several other parts of the country. Consequently, tight movement controls were put in place with regard to movements of beehives and nursery plants. Beehives moving into California from areas known to be infested with RIFA are required to go through a

comb-by-comb inspection before entry if RIFA is detected during a border check. Hives are also required to be transferred onto new pallets prior to going into pollination.

Large Hive Beetle (*Hoplostoma fuligineus*)

The large hive beetle[3] is one of a number of species of fruit and flower chafer beetles, but only four species from this group are reported to enter beehives. The large hive beetle is the most destructive and occurs in hot dry areas of South Africa, especially the Free State and Natal. It is also reported to be a problem in Kenya. While most attention around the world has concentrated on the small hive beetle, the large hive beetle can cause a lot of damage to brood combs. The adult beetles are about 20 mm long and 12 mm wide and prefer to feed on bee and wasp brood but will also devour pollen and honey. They can totally destroy combs in hives.

Hives under attack may become weak and queenless and most of the bees will leave the hive and cluster on the outside while the beetles are attacking brood. Ultimately colonies may abscond. A beekeeper I spoke to in South Africa said he had found over 200 beetles in some of his hives while up to 750 beetles have been reported. Each large hive beetle can eat a 100 mm^2 patch of brood per day. Strong hives of African bees can reduce the effects of the beetle, and some beekeepers place mesh over the entrances or reduce the size of the hive entrances to try and keep the beetles out of the hives. However, as many boxes are less than perfect, any extra openings need to be taped over. For commercial operations, this is often easier said than done.

Bee Pirate or Beewolves (*Palarus* and *Philanthus* species)

These ground-nesting solitary wasps are found throughout the world except Australia and South America. Some species specialise in capturing honey bees by taking them on the wing, while others capture them on flowers. The wasps may even enter hives to capture bees. The wasps generally only forage at high temperatures (21–40°C) and need sandy open savannah-type soil to nest in.

In Europe populations of 3000 of these wasps are not uncommon, and they can take over 30,000 bees per day[1], or the equivalent of a medium-strength colony. Beekeepers in South Africa say the banded bee pirate is one of the most destructive of all predators. Strong aggressive African hives can survive the bee pirates but weaker colonies may succumb, and queen bees on mating flights are especially vulnerable. Despite their defensive behaviour, the African bees are intimidated by numbers of bee pirates and may stop foraging and remain in their hives. This can be a serious issue during pollination and also for honey production.

The wasps typically wait at the hive entrance or on the lids of hives for returning bees. Beekeepers in South Africa have found that putting black plastic dishes filled with detergent water near the hive entrance helps trap wasps. The wasps either attack their reflection or become confused with sky reflections in the water. Placing sticky boards or tape on the hive lids also helps. Some beekeepers fit tunnel entrances to their hives but most have two reduced entrances on either side, with the centre area blocked off. This forces the bees to protect the sides of the hives where pests and predators tend to try and enter.

As with all wasps, control is difficult and the usual recommendations apply, such as finding the nests and destroying them or shifting the beehives away. Placing hives in deep shade[3] is also reported to reduce wasp predation.

Cape Bee (*Apis mellifera capensis*)

South Africa has two races of honey bee, the African honey bee *Apis mellifera scutellata* and the Cape bee *Apis mellifera capensis*[4]. *A.m. scutellata* is widespread and found throughout most of South and Central Africa in the areas known as the summer rainfall regions, but it is not found naturally in the Cape region. *A.m. capensis* is found in the Cape region of South Africa, which is known as the winter rainfall region, and has a vegetation type called fynbos.

Both races of bee are good beekeeping stock in their respective regions. Until recently these two races of honey bee were naturally isolated from each other by mountains and deserts, with a zone of hybridisation between the two species. It is unfortunate that while *capensis* is the commercial bee of choice in the Cape region, when it is introduced to *scutellata* areas it becomes a social parasite capable of wiping out commercial beekeeping. South African beekeepers say that after theft and vandalism, the biggest issue facing beekeepers is the 'Cape bee problem'.

Cape bee workers are unique in that they can develop large ovaries and produce female offspring. Workers from other races of honey bees can only produce male or drone offspring. Cape bee workers also produce huge amounts of queen-like pheromones so are tolerated in queenless parts of *scutellata* hives, such as outside combs and honey supers especially above queen excluders. Once Cape bee workers invade other colonies of *A. m. scutellata* or even European honey bees, they produce female offspring, which are essentially clones. These in turn become laying workers and are treated as pseudo queens by the resident workers. The foraging population dwindles as normal worker bees are not being produced in sufficient quantities to maintain the hive population and the resident queen is often lost. Such colonies will usually abscond or die out.

There is no cure for the Cape bee problem, and if such a bee were to establish and become widespread in New Zealand it would change beekeeping as we know it. Attempts to eradicate or manage this bee would severely disrupt commercial beekeeping in New Zealand. Best practice from South Africa suggests that apiaries would need to be more than 1 km apart; hives could not be shifted at all, or if this was necessary then movements should be at night with screened and bee-proof hives; equipment and vehicles moving between apiaries would

need to be bee free; and if one Cape bee laying worker was found in an apiary all hives would be treated as suspect and depopulated. In addition, hives would need to be inspected monthly and robbing should never be allowed to start. Only one honey super would be able to be used at a time, as the further the supers are from the resident queen the easier it is for laying workers to develop.

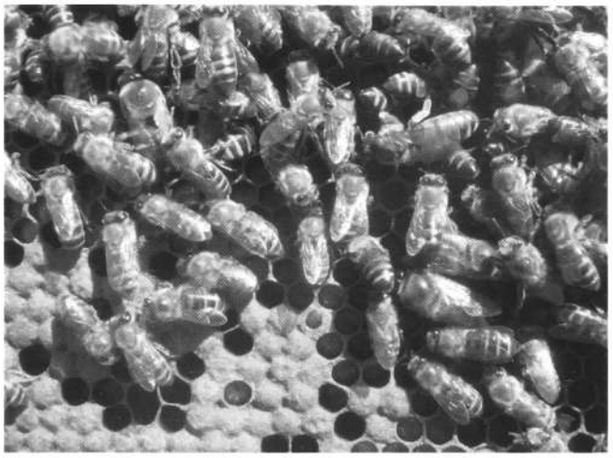

Figure 3: Cape bee queen with a *Braula* or bee louse on her thorax, plus Cape bee workers

Argentine ant (*Linepithema humile*)

The Argentine ant is in New Zealand and spreading. It is an incredibly successful coloniser capable of invading both disturbed and undisturbed areas. This ant can produce large numbers of aggressive workers and is reported to be a serious pest of beehives[1,3]. Argentine ants are capable of destroying strong hives by persistently attacking them over a period of days. However, they generally attack weak hives, nucs and newly established hives. It seems the ants have low odour levels and no alarm pheromones, so can enter beehives more easily and not be attacked by guard bees.

The Argentine ant may start attacking a colony by robbing honey but as more worker ants are recruited they attack and eat brood, dead adult bees and eventually any live adult bees that haven't absconded. They also attack any other ants in the area and soon become the dominant ant species. In South Africa one researcher reported that Argentine ants collect as much as 66% of the nectar from some *Eucalyptus* trees, in direct competition to the honey bees.

Figure 4: South African hive on tyres

Dealing with severe ant attacks is difficult. Poisoning nests or placing insecticides in protein baits, in an animal safe container, may work. In South Africa many beekeepers place hives on stands with or without ant protection on the legs of the stands. Other beekeepers also place hives on old car tyres and claim that the tyres deter some species of ants.

References

[1]*Honey Bee Pests, Predators and Diseases.* 1997. Edited by Roger Morse and Kim Flottum. A.I. Root Company, Medina, Ohio. 718 pages.

[2]Roper, T, 2002. Deadly Fire Ant discovered in New Zealand. *The New Zealand Beekeeper.* 10(7): 17–18.

[3]*Beekeeping in South Africa.* 2001. Edited by M.F. Johannsmeier. Plant Protection Research Institute Handbook No 14. 288 pages.

[4]McMillan D, 2003. Cape Bee the Social Parasite. *The New Zealand Beekeeper.* 11(7): 19–20.

From the colonies

Hawkes Bay Branch

As I write this it is raining, although unlike most of the country at least some of Hawkes Bay will be grateful for it. We have probably had better weather than most places this year but even so December was one of the coldest, windiest months I can remember. Some areas have a reasonable crop of honey but anywhere that is not sheltered or at a high altitude is just a waste of space. Some areas are already showing very high varroa numbers and it is becoming obvious that we will have to treat at least three times this year in many places; still the sun is supposed to shine tomorrow.

- John Berry

Southern North Island Branch

Members are saying that the season is very mixed; the weather seems to have finally improved and nectar is flowing in. Many commercial beekeepers are reporting a mixed bag: some hives in a yard are doing very well and others have little honey. This may be due to poor queen mating, the weather, varroa, or a combination of all three.

Queen cell production is well under way, with lots of new cells being introduced to provide new queens for autumn. Those suffering damage from the February 2004 and subsequent floods are rebuilding hive numbers by splitting and making up nucs to get back to normal hive numbers. It has been a busy spring and summer to date.

Honey production started out to look like another good season but now we expect the yield to be average.

- Neil Farrer

Nelson Branch

I am writing this in mid-January, the last possible date to get this to print, in the hope that I will be able to say clearly what is happening here in the Nelson area as far as the honey flow goes. However, it still seems unclear even now that we have had ten days of hot sun and NO rain. Some beekeepers were still feeding their hives up to Christmas. We had snippets of summer weather in December, but it was always interrupted with a cold spell and lots of rain. The unusually high rainfall has created abnormally large flowerings of most crops except for the manuka and kanuka, which have been patchy and poor.

If the weather stays warm, some beekeepers could end up with bumper crops, particularly in the clover and borage areas. This later than usual honey flow is going to be difficult to keep monofloral because of the unusual flowering season. Kamahi is flowering late at the same time as manuka, borage and clover. The autumn honeydew has started to produce earlier.

Most beekeepers have had a lot of problems with supersedure all spring and into the summer. Now in January some are reporting this problem continuing, along with late swarming. Most would agree that we have never had a season so difficult, but my non-beekeeping friends remind me that we say this every year!

The Nelson Club is sad to soon be losing one of its life members, Fred Galea, who is moving to Palmerston North to be nearer to family. Fred has been a wonderful mentor for many new beekeepers and has always been a willing helper if anyone needs a hand or some advice. Fred has always taken great pride in the calm temperament of his bees (which could often be measured by the daring width of the leg of his shorts that he often wore while tending his hives). We wish him and his wife Mary well in the North Island.

- Merle Moffitt

Canterbury Branch

After an exceptionally promising start to the season the rain started in Canterbury and it hasn't stopped all through December. According to an article in the paper it has been the wettest December on record and also the most dramatic in the last 59 years. It certainly is a far cry from last December, which I seem to recall held records of the other extreme. The last colonies' report was hoping for 2 inches of rain on Christmas Day—surely this is a great case of being careful what you wish for because it might come true!

Anyway, there is plenty of clover still about and all that is required is for a typical Canterbury nor'wester to turn the situation around.

Conference dates are Monday 4th - Thursday 7th July 2005 at Chateau on the Park, Christchurch. Details can be found on our website www.nba.org.nz, by phoning 0800 808 999 or by emailing res@chateau-park.co.nz. Rates are $118 + GST per room/per night.

All rugby fans out there will be well aware that the Lions play in Christchurch on 25 June. Beekeepers should be planning their accommodation bookings now, as there will be little available accommodation around the Lions' vs All Blacks test date.

Wishing everyone a good season and all the best for the new year.

- Brian Lancaster

Southland Branch

Summer has finally arrived — in February. Not quite sure where spring went, probably swamped in the deluge.

Today I saw a gravel island in the Mataura that has been submerged for the last three months and for much of that time the river has been right at the top of its banks, if not actually flooding in the lower reaches. To underline the confusion of nature I also noticed a gorse bush in fresh flower, something I would normally expect in mid-March.

Much of the honey obtained by Southland beekeepers this year will be coming from afar. Several thousand hives have been moved into Central Otago or the Maniototo in search of a clover or bugloss crop. The kamahi was largely washed out in most areas as, although there was a long and prolific flowering, the severe shortage of flying time meant that many hives did little better than maintenance. Rata is now starting to show some promise and hives previously moved out of the forest are starting to return.

Clover has been noticeably absent on the plains, and with the frantic activity as farmers attempt to catch up on their hay

and silage making, it will be interesting to see if reasonable crops can be obtained.

Stress has been noticed among beekeepers but fortunately not to the extent felt by queen bees, many of which have collapsed, unable to cope with the very poor weather. Some districts have had a lot of swarming with poor survival of the new hives.

At this stage it is important that hives are requeened successfully with a fully mated queen which has time to repopulate the hive before winter. We are all hoping for the settled weather patterns that will make this possible.

Next year will have to be better.

- Don Stedman

Rata in flower on the West Coast

Photo by Pav West

Honey bee losses during mowing of flowering fields

Peter Fluri[1] and Rainer Flick[2]
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From the beekeeping point of view, flowering meadows should be mowed after they have finished flowering. In livestock farming, however, it is often necessary to mow at an earlier time. In this study, the losses of bees during mowing of flowering fields using modern mowing machines was investigated and recommendations are given on how to minimise bee losses.

Introduction

Honey bees and other flower-visiting insects need meadows with a high density of flowering plants to supply them with pollen and nectar. Hence, great numbers of bees are present in these fields during the flowering period. Occasionally dandelion or white clover meadows are mowed when in flower even though a great number of bees are foraging in the fields. Rotary mowers, frequently combined with a processor are commonly used. These processors break and crush the mowed grass in order to accelerate the drying process in the field.

Beekeepers are fearful about experiencing considerable losses of bees due to this kind of mowing; however, little information is available in the international beekeeping press. The aim of the present study is to clarify the extent of bee losses caused by mowing of flowering fields and to provide information on how honey bee injuries and mortality can be avoided.

Trials

Plots, mowing process

Three trials on level plots of the trial farm at Tänikon Research Station (between Winterthur and Wil, Switzerland) were carried out from 1996 to 1999. One field was planted with *Phacelia tanacetifolia* in 1996; and two meadows with over 50% white clover (*Trifolium repens*) were cultivated in 1998 and in 1999. Each plot measured approximately one-third of a hectare.

Five or six honey bee (*Apis mellifera*) colonies were placed along one side of the plot a few days before mowing. They were weighed daily in the morning and in the evening, beginning two days before the trial and one day after.

The following trial conditions had to be complied with:

- Good development of flowers in the plot.
- Morning temperature above 16°C, sunny, at the most slightly windy.
- Lively, foraging bees on the plot.

A drum mower (width 1.8 m) with integrated processor fixed at the side of a tractor was used for mowing. This mower breaks and crushes the grass before dropping it in rows behind the mowing machine. The processor was adjusted to the usual high processing standard. In order to compare the effect of the processor, mowing was also done without a processor in the 1999 trial. Two different mowing speeds were chosen: 6–8 km/h (normal in practice) and approximately 2 km/h (slower than normal practice). The plots were mowed lengthways. About two-thirds to four-fifths of the field were mowed on the day of trial.

Calculation of bee losses

The number of honey bees in the field immediately after mowing, as well as the number and the condition of bees in the mowed grass, were recorded in order to determine the losses of bees. The bees in the field were counted in spot checks by means of quadrants (square frames) of one to four square metres surface area, which had been marked out in advance. Bees were counted in random samples in the mowed grass immediately after each passage of the mower. The calculation of average bee losses per square metre, respectively, per hectare was based on these counts. Honey bees were differentiated from bumble bees; no other wild bees were observed. The physical condition of the bees was recorded according to the following categories:

- Bees able to fly (not injured and injured).
- Bees unable to fly (injured, but viable).
- Dead bees.

Observation of behaviour

The behaviour of the bees was observed from the moment the mowing machine approached and when the flowers with bees were taken into the rotary mower. Observations were also carried out while the mowing machine was moving.

Bee losses

Phacelia

The average number of bees on the day of the trial in the phacelia field was 26 bees per m^2 or 260 000 bees per ha. About 35% (9 bees per m^2 or 90 000 bees per ha) of the bees present in the field were counted in the mowed grass table (table 1). All three categories of bees (able to fly, unable to fly but alive, and dead) were included in these numbers. Most bees that were able to fly had visible injuries to the abdomen or legs. Their chance of their survival was as small as that of the bees that were unable to fly. The speed of the mowing machine had no significant effect on bee losses.

In the phacelia trial an average of 65% (170 000 bees per ha) of the bees present in the field escaped the mowing machine.

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These bees were foraging on flowers higher than the upper edge of the mowing machine (about 70 cm above ground). They were shaken off onto the horizontal cover of the machine and from there they managed to fly away.

An average of 2000 bumble bees were present in one hectare of the phacelia field. Practically none of these were found in the mowed grass.

White clover

On average 1.7 bees per m^2 or 17 000/ha were present in the white clover fields on 10 July 1998, and about 3.9 bees per m^2 or 39 000/ha on 16 July 1999. After mowing with a processor 0.9 bees per m^2 or 9 000 bees per ha (1998) and 2.4 bees per m^2 or 24 000 bees per ha (1999) were found in the mowed grass (table 1). Hence, about 53% of the bees present in the field reappeared in the mowed grass in 1998 and 62% in 1999.

TABLE 1. Honey bee losses during the three trials.

	Phacelia (27 June 1996)	White clover (10 July 1998)	(16 July 1999) White clover
A. Before mowing: number of bees in the field (per ha)	260 000	17 000	39 000
B. After mowing with processor: Number of bees in the mowed grass (per ha)	90 000	9000	24 000
% of A	35%	53%	62%

Types of injuries

Bees found in the mowed grass that had passed through the processor showed the following external injuries:

- Abdomen crushed, deformed or torn open, discharge of haemolymph.
- Abdomen with sting and vemon sac pushed out.
- Legs or wings removed or partly severed.

Some bees showed no obvious external injuries, but were unable to fly, probably due to internal injuries. On the other hand, some bees were able to fly away despite having visible external injuries, e.g. exposed sting apparatus, deformed abdomen. But they could not conceivably continue functioning as worker bees in a colony.

Behaviour of bees in front of the mower

Foraging honey bees did not react to the loud noise and the vibrations of the passing tractor and the nearing mowing machine, and continued foraging undisturbed even in front of the mower. Some bees started to react when the plants were dragged and tossed by the machine; others clung on to the flowers even during this fraction of a second. It is the height of the flowers compared with that of the mower that determines how many bees pass through the machine. The upper cover of the mower used in this trial was 70 cm above ground. Bees foraging on flowers below this height had practically no chance to escape the machine. No substantial difference in the behaviour of escaping bees could be found between the slow and fast moving speeds.

Bumble bees showed a clearly quicker reaction compared with the sluggish behaviour of honey bees, and they often succeeded in flying away.

Changes in weight of honey bee colonies

The weight of five colonies from the edge of the phacelia field increased and decreased daily by up to 900 g. However, the fluctuations occurred so irregularly that no clear conclusion could be drawn. Interestingly, none of the five colonies showed an increase in weight on the day of the trial, however, the weight of four colonies decreased by 300–600 g. This might be explained by a loss of bees during mowing of the phacelia field.

Discussion

Bee losses

The trials indicate the possibility of considerable bee losses when flowering fields are mowed with mowing processors. The extent of the losses depends mainly on the characteristics of the plants grown (attractiveness for bees, height of flowers above ground), on the intensity of foraging, and on the mower (with or without a processor).

The different height of the plants might explain the fact that the rate of bee losses in the white clover fields (53% and 62%) exceeded those in the phacelia trial (35%). The white clover flowers were about 25 to 30 cm above the ground, and so the bees were less likely to escape the mower than in the phacelia fields where most flowers were taller than the mower and the chances of escaping were much better.

On the other hand, bee losses of 90 000 bees per ha in the phacelia fields exceeded those of 9000 and 24 000 bees per ha in the white clover fields by a factor of four to 10. This difference can be explained by the density of bees foraging; in phacelia fields there were seven- to 15-times more foraging bees than in white clover fields.

Impact on bee colonies

Bee colonies placed beside the fields were not weakened substantially by the mowing trials. However, no exact record of bees leaving and entering the hives was kept. It may be assumed that bees foraging in the trial fields may have come from other hives, thus, bee losses were spread among a larger number of bee colonies. Nevertheless, the impact on a single colony should not be underestimated. In summer, an average colony contains from 25 000 to 30 000 workers, and about one-third of these are foragers. If suddenly a large proportion of these foragers is lost due to mowing, this may temporarily lead to losses in the foraging yield and to irregular colony development. Healthy bee colonies are able to compensate for losses of one age group within several days or within a few weeks.

No wild bees were found and recorded in our trials, with the exception of bumble bees. Their incidence in the fields was mostly below the 1% of the number of honey bees. Even less bumble bees were found among the injured or dead insects. Their faster escape reaction (compared to honey bees), when the mower approaches, might explain this.

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Cover crops
In agricultural practice phacelia is mainly grown for green manure. Generally, it is mowed or beaten down before flowering in order to prevent seeding. White clover meadows are occasionally mowed at the time of flowering, especially in summer. In spring, dandelion meadows are occasionally mowed during flowering. Bee losses similar to those in white clover can be expected if the mowing is done while bees are foraging intensively.

The effect of beating on insects visiting the flowers may differ from that of mowing with a processor. According to a German study beating of a phacelia field caused no serious bee losses. In this case the tractor drove in front of the beating machine, presumably chasing away some of the bees.[1]

Mowers
The processor is the major cause of bee losses. Most of the bee injuries occur after cutting the plant stems, when the mowed grass is snapped and crushed in the processor. The bee injuries recorded can be explained by their treatment within the processor. Apparently the speed of the tractor has no noticeable effect on bee losses. Development of a mower with a suitable device for eliminating the bees is a possibility for the future.

Recommendations for practice
In order to keep bee losses to a minimum, we make the following recommendations:

- Observe the activity of the bees in the hive immediately before mowing. Rule of thumb: if more than one bee per m^2 surface area is present on the flowers, mowing or beating should be postponed until a time when fewer bees are foraging.
- Consider the weather and the time of day: generally, fewer bees forage when the sky is overcast, the temperature is low or a strong wind is blowing; also early in the morning before 07.00 h or in the evening after 18.00 h.
- Use a suitable mower: rotary mower without a processor or mower with a cutter bar.

Reference

1. Kalthoff, A; Ackemeier, M; Mühlen, W (1998) *Gefährdung blütenbestäubender Insekten beim Schlegeln von Phaceliafeldern zur Zeit der Vollblüte.* Bericht des Instituts für Pflanzenschutz, Saatgutuntersuchung und Bienenkunde; Münster, Germany.

Acknowledgement
The authors are grateful to Dr Barbara Bogdanov for translating this article into English.

Notes
Reprinted from Bee World *83(3): 109–118 (2002). This article was abridged to exclude figures contained in the original.*

Originally published in German: Fluri, P; Flick, R (2001) Bienenverluste durch Mahen bluhender Wiesen. *Schweizerische Bienen-Zeitung* 124(8): 19–23.

NBA Library news

Happy new year to all. I hope that by the time this magazine has reached your mailbox the sun will have reached your apiaries also.

The library has three DECA folders of updated OHP transparencies available free of charge to those branch representatives running DECA courses.

Those of you who attended the seminars at the time of the conference in Nelson will recall the presentation about *The Reference Manual for Honey Extracting Facilities and Food Safety Program* put out by Capilano Honey Ltd. This comprehensive book covers the following aspects: Scope, Microbiology of Honey, Implementation Approach, Premises, Facilities, Equipment, Self Audit, HACCP Support programs, HACCP, and Workplace Safety. The library has two copies available for loan for the small fee of $1.00, plus the reimbursement of the outward postage. Please contact the librarian if you would like to borrow any of the above.

The other side of borrowing is, of course, returning and sometimes this causes some problems. Please remember that other borrowers may be waiting for these books, videos or magazines. Sending out reminders is time-consuming and costly. Please assist by sending items back to the library by the due date, or asking for an extension if they are needed for longer. Unless another borrower is waiting, a new due date will be assigned.

Suggestions as to new books to purchase for the library are always welcome. At present, enquiries are being made about replacing two missing books: *Value-added products from beekeeping* and *Breeding queens*. The latter went missing from the display table at the last conference and still has not been returned to the library.

Please get in touch if there is anything you need to borrow from the library.

- Chris Taiaroa
Hon. Librarian

About the Apiary

December was an indifferent month for some beekeepers. Lots of rain and a severe cold snap delayed the flowering of many of the main honey-producing species. Instead of being the start of the main honey flow, the bees only managed to fly every other day, collecting a little pollen when the weather permitted.

January wasn't much better on the west coast of the North Island, although we started having a few good days between the rains. By mid-January everything was flowering, with abundant clover and a prolonged flowering of the Pohutukawa, but the weather continued to restrict the bees to gathering nectar and pollen every third day. Constant cold and warm fronts from across the Tasman Sea washed the nectar out of the flowers. When it wasn't raining it was either windy or cloudy, with temperatures around 15 degrees: hardly bee-flying weather. One of these storms produced a month's rain in a single day, causing minor flooding and washing out access tracks and creek crossings.

The bees have been working well when the weather is fine but the stop-start honey flow has resulted in the bees packing honey around the brood nest instead of in the top supers. About mid-January swarm cells started again. To my knowledge my hives didn't swarm but we have been getting reports that feral hives have been swarming despite the presence of varroa.

During January I have been checking that hives still have spare room in the top super for honey. Where hives hadn't moved into the fourth super, I've broken them down to check whether the queen is still laying. If she is, I've swapped the top spare honey super with the one immediately above the brood nest to encourage the bees to gather nectar instead of feeling overcrowded and making swarm preparations. During this process I also came across the odd hive that had become a drone layer. I could have added a few frames of brood and a new queen but as the chances of the hive building to a production unit were remote, I have been shaking the bees out of the supers on to the ground in front of the hive and adding the drone layer's supers to other hives. The bees then join the hives closest to the original site without fighting.

One thing I noticed is that only about 20 percent of the manuka bushes have flowered. It seems to me that the cold spells and all the rain have allowed the manuka to go from a flowering phase into a regrowth stage. Many of the bushes have flowers along the branches topped with 20 centimeters of new growth, so it looks like we won't be getting very much honey from this source this year.

Production is very patchy. Some apiaries have done reasonably well but hives are between one and two boxes down on what I would expect in a good year. It has also been noticeable that apiaries protected from northwesterly winds have done much better that those in the more exposed valleys. Thankfully the hives around the cities are doing reasonably well and up until now they have been given extra supers to keep them working.

It's time to get capped supers off the hives, put the honey into drums and the empty supers back on to stimulate the bees into gathering more nectar now that the weather (now late January) has settled. *Don't forget to inspect all brood frames for BL disease before removing any honey!*

Photo by Frank Lindsay

Extracting

Extracting can be a messy business for the hobbyist beekeeper but it need not be, given the right gear and a little forethought. One of the messy jobs is uncapping and handling cappings. With the range of plastic bins in the shops these days, it's easy to make a container to uncap into that will take the cappings and allow the honey to separate out overnight. All you need is one deep bin and a shallower bin that fits snugly into the deep one. Drill lots of 5 mm holes (about 25 mm apart) through the base of the shallow bin and then, using a 25 x 25 mm board, make a support to hold the frame while it's being uncapped. You also will need: (1) four short pieces of the same wood to hold the support so that it fits snugly across the middle of the shallow bin, and (2) a nail driven right through from underneath that you place the frame on. Place the end bar of the frame on the nail, cut the capping off one side of the frame, spin the frame around on the nail and uncap the other side. The cappings fall into the shallow bin and the honey in the cappings begins to drain into the lower bin. When you have finished uncapping, remove the wooden frame support and put on the bin cover. Generally most of the honey will drain out overnight (depending on temperature). Lift out the shallow cappings bin and put the now-reasonably dry cappings in a top feeder and place on a hive in the evening. The bees will come up into the feeder and recover any honey from the cappings. The dry cappings can then be melted down in a double boiler or a solar wax melter. The honey in the lower bin can be skimmed or strained and bottled. Wash and dry the bins and you are ready to uncap again. Generally these large plastic bins can hold the cappings from 14 to 20 supers at a time.

When using an extractor it's important to balance it. Select frames of the same weight and put them opposite each other. Start at a slow speed and gradually increase the speed until half the honey on one side of the frame is removed. Then reverse the frames and spin out all the honey, then reverse again and complete the first side. It's a bit labour intensive but prevents breaking the wax on newly drawn frames. The

maximum speed of an extractor is about 300 revolutions per minute.

Requeening

February is also the time everybody should be thinking about requeening hives. Any hives that have swarmed, have second year queens or haven't produced well should be requeened. Queen breeders are gearing up to full production to supply commercial beekeepers and later to supply overseas markets, so order early and get the queens in before the end of the honey flow. Replacing queens while there is a flow on is much easier than trying to replace them late in the season when bees will rob any hive left open for a while.

A week before the queens arrive, isolate the queen to the bottom super using a queen excluder. When the new queen arrives, it's easy to move the bottom super away from the hive stand for half an hour or so. All the field bees will return to the original site and this makes finding the old queen easier. The best method is to set up a four-frame nuc and introduce the new queen into it. When she is laying well after two or three weeks, find and dispatch (kill) the old queen and introduce the complete nuc (with the new queen) into the middle of the original hive. If you wish to retain a nuc over the winter, the frames removed to make way for the nuc can be reused (with the old queen if she's still laying well). Put the frames into the nuc box, close it up and move it to a new site (to prevent the field bees drifting back to the original hive) if there is a flow on so they can put in some stores for winter.

If you want to make your own queens it's possible using a technique the Berry family in the Hawkes Bay have perfected. They use a super with mesh covering the bottom that provides good ventilation but prevents the bees from flying. You can use a four-frame nuc box as there's no need to produce as many cells. Cover the base with mesh and drill a 2 cm hole in one end towards the bottom and block it off with a piece of foam plastic or similar material. Into this nuc box place a frame of pollen, a frame of honey and pollen and a feeder. If you don't know how to graft larvae into queen cell cups or do not have grafting gear, select a frame of brood with either eggs or very young larva (about the size of an egg) from your best hive, but first make sure that the queen is not on this frame. Select a few cells with very small larva about 25 mm apart and, using the end of a pencil, open out the face of about six selected cells. Place the brood frame between the pollen and honey frame.

Then go to a number of hives (if you have them) and, after making sure the queen is not on the frames, shake the nurse bees off a number of frames of brood into the nuc and cover it. You'll need approximately 300 bees to produce each queen — half a 500 g jar full for each queen cell you want to develop. Take the nuc box back home and feed and leave it blocked up.

If you know how to graft, prepare the cell bar ahead of time and take it along when you are making up the nuc. Instead of putting the frame of young larva into the nuc box, graft the very small larva into the cell cups. The maximum size of larva you can use is 1.5 times the size of the egg (that is, use larvae that are about 20 hours old). Grafting should be done out of direct sunlight and in a damp atmosphere. Cover each cell as it's grafted with a bit of a damp tea towel. When you have finished, shake in the nurse bees, close up the nuc and leave the nuc box in a cool situation off the ground so that the bees get sufficient ventilation through the mesh floor.

After 24 hours, open the nuc and look for the cells you opened slightly. There should be lots of royal jelly in the bottom of the cells and the bees should have started extending the cell outwards. If there are more than six cells with lots of royal jelly in the bottom, select the largest larvae and remove them with a toothpick so that only six cells remain. After a further 24 hours you can release the foam stopper so the bees can fly.

On the 11th day after you have set the nuc box up, you should cut the queen cells from the frame and place them into a nuc that has been queenless for 24 hours. If you want to requeen a large hive, the cell will need to be protected. Use oven foil to cover the all but the bottom 4 mm of the cell. The bees cannot rip down the queen cell and the new queen will emerge the next day. Be careful: queen cells at this stage of development are delicate. The new queen's wing buds are touching the side of the cells and any jarring can injure her so that her wings will not develop. If you drop the cell, discard it. Place the queen cell in the middle of a patch of brood so that the bees will keep it warm.

When a virgin queen emerges into a full-sized hive she will immediately feed herself and within seven days she will fly and mate. During this time she might fight and kill the old queen but sometimes she will quite happily coexist with the old queen in the hive.

Continued on Page 19

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Sometimes both the new and old queens will die, or the new queen does not return to the hive after her mating flight, so it pays to set up several mating nucs (two frames of emerging brood plus two frames with honey and some pollen) in case of failure. Or you can remove the old queen and place her in a nuc for two weeks or until you are certain the new queen is mated and laying — look for eggs.

Rearing a few queens can be fun but it can take a bit of practice to perfect. After a few times you can understand how much work is involved in queen rearing and why the cost of purchase price of new queens is increasing. If you want to mark your new queens, the colour for 2005 is blue.

Varroa

For those in the North Island, February is an important month to check varroa levels in hives. You can't do it simply by looking at your hives. You have to go a little deeper into the hives, pricking out drone brood with a cappings fork, or use some of the other methods (like sugar shake) to determine mite levels. The idea is to treat hives before varroa starts affecting your emerging brood. This generally means *now*.

If you do not treat in time, you'll see some of the visual signs such as dead shrunken larvae on the landing board (if you have viruses in your hives), or you may see the "crawling death"; that is, drones and bees fully formed but unable to fly, crawling away from your hives. Not a very nice sight.

I use mesh bottom boards on my hives, as they provide a quick and easy way to determine mite levels without disturbing the hives. Apiaries in areas that have had mites for some time have very low levels (3–5 mite droppings per week) but others that are situated close to the creeping varroa front have high levels as feral hives break down. If these hives are not treated now, they too will be dead in a month or so.

Most of the treatments require you to remove the honey crop from the hives before treating your hives to prevent residues from these treatments getting into the honey supers. However, a few chemicals and products can be used in an emergency with the honey still on, such as Bayvarol and oxalic acid. If you are unsure, refer to your MAF *Control of Varroa* guide or contact your local AgriQuality Apiary Advisory Officer.

Things to do this month

BL (bacillus larvae) check before removing any honey, extract honey, remove comb honey, rear autumn queens, introduce purchased queens or protected queen cells, produce nuclei, control varroa and check for wasps.

If you are having a wasp problem, put a jar of old jam out in a bait hive. When the wasps begin feeding from the jam, introduce some poison (Carbaryl) into it. Within a few days the wasps will be gone. Dispose of the jam jar immediately.

- Frank Lindsay

AFB NPMS matters

The following notice appeared in the *New Zealand Gazette*, 20/1/2005, Notice: gs297

Notification of Rates of Levy for the 2005-2006 Calendar Year

The Management Agency of the American Foulbrood National Pest Management Strategy (the National Beekeepers' Association (Inc)), hereby advises, as prescribed in the Biosecurity (American Foulbrood – Apiary and Beekeeper Levy) Order 2003, that the levy for the 2005-2006 year will remain the same as it has been for the 2003-2004 and 2004-2005 years.

The levy rate will be (excluding G.S.T.):

(a) Base levy of $20.00; and

(b) apiary levy of $8.00 per apiary.

However, as stated in clause 7(4), if a beekeeper owns fewer than 11 beehives on fewer than four apiaries, the sum of the number of registered apiaries must be treated as one.

JANE LORIMER, President, National Beekeepers' Association (Inc).

ACCURACY OF APIARY REGISTER

In order that the Apiary Register represents accurate data beekeepers are urged to ensure that their information on Apiary sites is correct as at 31st March 2005.

Beekeepers can verify their Registered Apiary sites by contacting AgriQuality who will also arrange for new apiaries to be registered or disused sites to be deregistered. Forms are also available on the web site www.nba.org.nz

Report on NSW Apiarists' Association (Inc) Conference, Ballina, New South Wales, Australia, May 2004

Ballina is a lovely seaside town in northern New South Wales, just three hours' drive south of Brisbane. Like many of the coastal regions of Queensland, it is developing fast with an upgraded shopping area and new housing subdivisions surrounding the town. Ballina is situated on the mouth of the Richmond River and has a lovely mild climate (during the winter anyway). The biggest building in town is the RSL Club.

Conference venue

While driving south we saw quite a few apiaries in the regional parks along the coastal strip. The bees were working banksias and 'tea tree'. This is not the tea tree that we know as manuka/kanuka, but is Melaleuca, a tall tree that lives in swampy ground and has a small white 'bottle brush' type of flower.

Arriving at the conference registration area, the first thing that struck us was the age of the beekeepers: more than half were under 30 years old. When looking around the parking area, most of the vehicles were modern utes and trucks, mostly with hive lifters. An indication perhaps that beekeeping in this area of the State is healthy.

The Minister of Agriculture opened the conference and mentioned that 70% of the State was still in drought. One thing I didn't realise is that when the drought is broken with sufficient rain, it takes another two years before beekeepers start to get decent honey crops again. Also beekeepers tend to be located geographically closer together than in New Zealand. Although sites are getting harder to secure (beekeepers are being excluded from regional parks), some will share sites with another beekeeper when the other's district is in drought. These favours are often repaid as the rain is unpredictable.

Forest fires can be very destructive both to hives and the forest; however, sometimes a quick burn can be beneficial. Quick burns don't kill the trees and within twelve months, with sufficient rain, they produce massive regrowth and flowers.

Residues

Australian beekeepers are very mindful of residues and they do not use chemicals to remove honey. The only methods approved are shaking, blowing and the use of escape boards. Beekeepers are also moving away from Metalex to treat hive parts and are using eco-treatments that do not leave residues.

Fumidil-B is not registered for general use in Australian honey-producing hives. Although it's registered for use only by queen breeders, it is seldom used. Nosema only becomes a problem when hives are forced to work winter flows. Most beekeepers move hives to winter sites and let them rebuild on the pollen and nectar sources.

Field day trade display area

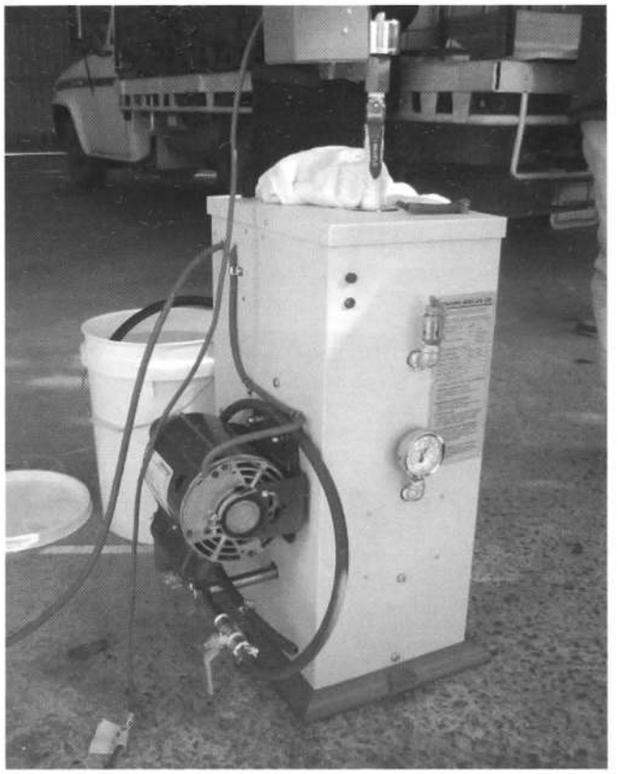
EFB is not considered a problem in most States but has a similar status to chalkbrood in New Zealand. OTC (oxytetracycline hydrochloride) can only be used to treat EFB-diseased hives with the approval of a MAF officer, following positive verification from a laboratory. Oxytetracycline hydrochloride is now used in fine sugar, dusted around the edges of the brood nest to prevent residues getting into the storage combs. If honey is extracted from a treated hive, it can be used only in the baking industry. However, in most cases beekeepers don't bother treating diseased hives. They just kill the bees and send the hives to get irradiated as these hives produce well when restocked. A new irradiation plant has been built in Queensland, which can take a pallet load of equipment.

Chalkbrood

Chalkbrood has spread quickly through Australia and peaked in Western Australia about 12–15 months ago. As in New Zealand, it's not considered a major problem. Dark bees can't cope with it and some beekeepers consider it unprofessional to use dark bees.

Chalkbrood has particularly affected Tasmania. Breeders there have developed a bee that works well in their climate from dark (mellifera) and yellow Italian bees. Hives can have up

to 50% brood infected. Production is down by half in some areas but these beekeepers have experimented to find a treatment that assists the bees to control this disease. They have found that a ripening banana, cut in half lengthwise and placed skin side down on the bottom board under the brood nest, reduces chalkbrood. Tasmanian beekeepers have also noticed that feral hives have disappeared in the ranges and believe the bumblebee could have something to do with it, such as competing for food sources.



Single phase steam boiler

American foulbrood

AFB is a problem in Australia as for beekeepers all over the world, but I didn't see any statistics. All beehives have to be registered in NSW ($18 for two years plus $3 per 10 hives for AFB insurance). It must be difficult for the regulatory officer to follow up problems as beekeepers move their hives constantly following flows. It would also be impractical for the regulatory authority to operate an apiary register, as hives are only stable for a few months during their short winter.

I feel beekeepers could add grid references to their apiaries so that authorities could quickly locate apiaries instead of relying on the beekeeper's descriptions or having to be taken to sites. The main drawback is that it is difficult to warn neighbouring beekeepers when robbing occurs. GPS technology would help greatly in coordinating endemic disease outbreaks, exotics, fire (i.e., notify beekeepers of impending danger) and in spraying to control plague locusts. Currently. small planes fly over the area and try and locate beehives and other eco-important areas.

Small Hive Beetle

The Small Hive Beetle is still spreading but their numbers don't seem to be building up in hives. Authorities indicated it would take about 10 years to determine if this insect was going to have adverse effects on hives. It could be something to do with the climate: it's very dry with a large diversity of ants in most areas. Beekeepers have to keep an eye out for the beetles and as with all endemic diseases, it's compulsory to report them when they are found in hives.

Pollination

Pollination has moved on slightly in the last 10 years, boosted perhaps by the plantings of almonds. The almond producers will need 50,000 hives by 2008; however, prices are very low at the moment as there is an oversupply of hives. (The price is set at $45 and will rise by only $5 per year until the price reaches California prices. If they get varroa, there will be a big jump in the price). I was surprised to hear that hives were being moved in from 10 hours away — not a great distance to Australian beekeepers.

In the spring hives are generally moved close to orchards as these provide good quality pollen and nectar, but beekeepers are not paid for the bees' services. Macadamias are taking off in northern NSW and although wind pollinated, growers can get increased returns by using bees, and paid pollination is increasing.

All utes carry water

Fireblight

Beekeepers are very concerned about fireblight having been found as the quarantine restrictions require that all hives within a certain radius (10 km) will be destroyed without compensation. Bees are the main vector and beekeepers would have to sue to recover any money. Some large beekeepers are a little apprehensive as their bases are located within apple and pear growing areas.

Unfortunately here in New Zealand we do not hear anything about fireblight so we beekeepers are a little ignorant on this subject.

Beehives

Beekeepers generally use a single brood nest but some are running two queen units side-by-side, separated with a tin divider. Some lift sealed brood up above the excluder in the spring to give queens room to lay.

All commercial beekeepers have nucs on hand to replace queens when they see one failing. Quite a few are having acceptance and supersedure problems. Their research has shown that you get far greater acceptance when new queens are left in the mating nuc for 28 days. It was estimated that

queens would cost an additional $5 to cover the loss of production.

Queen breeders

As with queen breeding in New Zealand, not many Australians are taking up this job as it is not producing a good income. The Australian queen breeders gave a presentation showing how the price of queens had not kept pace with inflation. In 1974 it cost the value of 5.9 kilos of honey for a queen. This has progressively dropped over the years, until today it only takes 2.4 kilos of honey per queen in Australia, (they are receiving over $4 per kilo for honey). Queen breeders are exporting to make a living.

I also learnt that to produce and maintain a genetic line of bees, you need to use AI (artificial insemination) to fertilise the queen mothers. More beekeepers should consider taking up Mark Goodwin's offer to teach AI techniques to those interested in breeding queens.

EZYLoader compact unit on ute

Beekeepers

As I mentioned at the outset, the majority of beekeepers tend to be a lot younger than in New Zealand. Children take over from their fathers and most have late model trucks, indicating that beekeeping is paying dividends. Good trucks are essential as hives are moved to flows every few weeks resulting in some trucks travelling 50,000 km per year. All have loaders, with the EZYLoader (formally the Billett Loader) being predominant. Perhaps it's to do with the EZYLoader having been developed in the Ballina area). I was surprised how versatile the loader was. Beekeepers had developed forks that lifted pallet loads using the 300kg unit, which were being used by many outside industries. The swinging arm is ideal in large honey houses when set on a pole. It takes up very little space and saves on lifting: no need to lift a heavy super again. It can be made to have a long reach: a 5-metre circle, I believe.

Given the rather cold climate, I was surprised to learn that 70 percent of Tasmanian beekeepers use plastic frames.

Research

Beekeepers have put a lot of money into research and the Australian Government has matched this investment dollar for dollar. Beekeepers are still doing a lot of practical research, while unfortunately we have had to drop research to concentrate on varroa.

You can download research papers from the Rural Industries Research and Development Corporation (RIRDC) website (http://www.rirdc.gov.au/) but it's nice to have the published document. I also purchased two CDs, the Honeybee Programme, version 2, which contains research reports covering the last 10 years (recommended) and the Pollination Manual 2000. This manual has been written for Australian conditions. It's good for a new beekeeper starting into pollination, as it lays out the code of practice for both the beekeeper's and orchardist's requirements, but it doesn't cover main New Zealand crops.

Horizontal extractor

Concluding thoughts

Our up-and-coming beekeepers should consider work experience in Australia. We are changing our beekeeping practices and becoming more mobile and there is always something that can be learned. Like beekeepers everywhere, Australian beekeepers are very welcoming and open with their management techniques.

A very successful field day was associated with the conference, attended by more than 500 beekeepers. If New Zealand beekeepers get sick of extracting, I suggest taking a break at the end of May and attending the NSWAA conference in Orange, NSW. Take warm clothing, as this town is well inland.

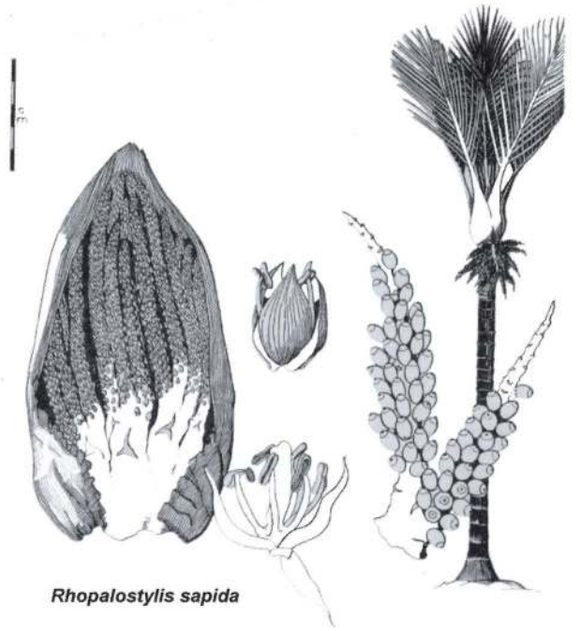
A final comment/brainteaser

What's the difference between New Zealand beekeepers and Australian beekeepers? Australian beekeepers are always looking up into the trees as they drive, while New Zealand beekeepers tend to look to the side while driving.

Both are scanning for what's flowering or about to flower — unsafe driving practices in both countries.

- Frank Lindsay

Trees and Shrubs of New Zealand



Rhopalostylis sapida

Rhopalostylis sapida

Common name: Nikau

The only member of the palm family in New Zealand, the Nikau grows to 10 m in height with leaves (fronds) one to three metres in length. The Nikau is usually found in dense bush from North Cape to Banks Peninsula and as far as Hokitika in the South Island.

The flowers are white and hang in clusters from beneath the leaf sheaves. Bees work the flowers from November to February to produce a water-white honey that is strongly flavoured.

The Nikau leaves were used in the early days for thatching. The central shoot can be eaten, but to do so kills the tree. Captain Cook used this cooked as a green vegetable on his first voyage.

The inner pith was used as a laxative, and nikau sap was drunk by pregnant women to assist in labour. Sap was obtained by piercing the bulbous part of the trunk.

The hard nikau berries were used by young girls as beads, and early settlers used them as bird shot when ammunition was scarce.

- Tony Lorimer

NIWA's climate outlook: January to March 2005

Lower than normal mean sea-level pressures to the south of New Zealand are expected, with stronger than normal west to southwest wind flow over the country. Sea surface temperatures around New Zealand are expected to be below average in January, but tending to average by March.

The average air temperature for the next three months is expected to be below the historical average everywhere except in the east of the North Island, where it is expected to be average.

Below normal or normal rainfall is expected in the north and east of the North Island. Rainfalls are expected to be near normal elsewhere.

A gradation of soil moisture levels and streamflows is expected across the country, ranging from below normal to normal conditions in the north and east of the North Island to normal or above normal conditions in the west and south of the South Island.

The present weak El Niño is likely to continue through the next three months. The chance of an ex-tropical cyclone affecting New Zealand over the summer is near the long-term average.