ABOUT THE *BEEFAX* LOGO

The drawing of the two bees, which is the *BeeFax* logo, displays a behaviour commonly known as "food exchange". The technical term is *trophallaxis*, and while the transfer of nectar or honey is certainly involved, according to *The Hive and The Honey Bee* (one of the world's great texts on bees and beekeeping), trophallaxis is more important as a form of communication; a sharing of information about food sources and the all-important pheromones which are essential to the life and cohesion of the colony. That's also what *BeeFax* is all about -- communication and the sharing of information which is so vital to the well-being of our beekeeping industry.

BeeFax is a publication of the National Apiculture Business Unit, MAF Quality Management. Editing and production is by Cliff Van Eaton, MAF Qual, Private Bag 12015, Tauranga. Copy is written by Cliff Van Eaton, unless otherwise indicated.

Communication regarding back issues and fax distribution to David McMillan, MAF Qual, Private Bag 50034, Mosgiel, phone (03) 489-3809, fax (03) 489-7988.

Mention of any product or service in this publication does not constitute endorsement, or preference over any other product or service not so mentioned.

BeeFax was produced by the National Apiculture Business Unit, MAF Quality Management.

It appeared from October 1995 until December 1997. During some of that time it was included into the NBA's NZ Beekeeper magazine.

The images and text above came from a typical volume. Apart from such images, the publication was primarily text provided by the range of Apicultural Advisory Officers from that time.

This text was extracted from the original MS Publisher files, which are no longer supported. I was unable to retrieve the (admittedly minimal) layout, but feel confident I got most of everything else. Lines are sometimes broken in strange places – the original was much nicer!

There are several missing issues.

BEEFAX

Vol 1, No 1

October, 1995

All About BeeFax

If you're reading these words, you're probably one of the many beekeepers in New Zealand who has just received this first, free issue of BeeFax. On behalf of all the Apicultural Advisory Officers (AAO's) working for MAF Quality Management, I would like to thank you for taking the time to send in your request form. I hope you will find much of interest in the next several pages. I also hope you will decide to become a regular BeeFax subscriber (you'll find a subscription form on the last page).

I'm really excited to be editing BeeFax, because it represents a return to the tradition of AAO newsletters which were produced in various parts of the country for a number of years. Many beekeepers, both large and small, looked forward to reading those newsletters. They contained a great deal of valuable information on all facets of beekeeping, from the basics of hive inspection, to the latest cost-saving ideas and techniques. And from time to time, there was even a bit of beekeeping humour as well!

The advent of user-pays for advisory services eventually led to the disappearance of the AAO newsletters. The costs of production and distribution, on an apiary district level at least, could no longer really be justified. I personally put my efforts instead into editing and writing many of the articles for Buzzwords, the National Beekeepers' Association newsletter. But when that publication ceased at the end of 1993, I began to look for another opportunity to edit a beekeeping newsletter; one that would combine the best elements of the information-centred AAO newsletter, and the more current events style of Buzzwords.

Now, with the support of my colleagues in the Apiculture Group in MAF Qual, that opportunity has come. We have a wealth of talent and experience in our group around New Zealand, and all the AAO's will be contributing information, news and views to BeeFax. In this first issue alone you can look forward to an article on nosema by Robert Rice (Robert is doing his PhD thesis on the disease) , an interesting article on the hearing sense of bees by David McMillan, and a story on the recent Apimondia World Beekeeping Congress by Murray Reid, our man on the spot.

BeeFax will have a number of regular features, including Bee Diseases, Bee Science, Gadgets and Gizmos, Bee News from Around the World, and even a series on Beekeeping and Modern Technology (see my article on the Internet in this issue).

And keeping with the modern technology theme, we plan to break a bit of new ground with the way we distribute BeeFax. Many beekeepers now own a fax, and use it as part of their business. If you're one of them, you can receive BeeFax instantaneously! On the evening of the first working day of the month,

simply make sure your fax is set to receive mode, and a nifty piece of software stored on a computer at Invermay will digitally send the complete computer file which makes up BeeFax (created on Microsoft Publisher), to you and everyone else who selects the fax option on the BeeFax subscription form.

Your fax will in effect become the printer, and you can expect a printed result which is much clearer and of better quality than what you normally receive via fax. (If you choose the fax option and for some reason you don't receive a faxed copy on time, make sure you contact your local AAO. As with all new technology, there's bound to be a few bugs in the system, but I'm sure we'll be able to sort out any such problems.)

If you don't have a fax, or don't want to get a fax call after 10pm (lowest phone rate), you can still receive your copy of BeeFax the regular way by post. Just don't choose the fax option on the subscription form and we'll send you a printed copy of BeeFax on the first working day of every month instead. BeeFax promises to be timely and up-to-date, no matter which way we send it to you!

- Cliff Van Eaton, AAO, Tauranga

Disease Fax (Nosema apis)

Nosema apis - the disease you have when you don't think you have a disease; or the disease you've got when you can't see a disease. It is also known as the disease of aggressive beekeeping because the disease usually occurs at much lower levels in feral hives than in managed hives.

Nosema apis, like many of the other bee diseases, is distributed world-wide, although the degree of effect varies between countries and regions. The disease was first described in 1909 by Zander. Nosema belongs to a group of organisms known as the microsporidians, and is not a bacteria, although its about the same size as a really large bacteria. Nosema measures 2.5-3.0 by 5.0-6.0 micrometres and looks much like a football under the microscope.

Nosema only infects adult bees. Newly emerged bees eat the spores while cleaning brood combs. Nosema enters the bee by injecting it's germ cell into the cells which line the gut of the honey bee. The germ cell rapidly multiplies, eventually filling and rupturing the gut cell. Mature nosema spores are released back into the gut where they germinate, infecting healthy cells, or are passed out in the faeces to infect other bees.

The initial infection cycle takes about four days, with subsequent cycles building up the infection level. Bees develop a full blown infection in 14 to 21 days, by which time the bee has upwards of 3,000,000 nosema spores in its gut. Really bad infections can result in levels of 20 to 30 million spores per bee.

An infection level of 100,000 spores/bee or more is considered to be a problem. The disease causes premature death, particularly in the older bees that have come through winter. Often tens to hundreds of dead bees lay on the ground in front of the hive as the infection peaks, a phenomena known as "spring dwindle".

The levels of nosema infection vary between hives, and are influenced by many factors, including weather (cold, wet weather is worst), stress created by hive management, and hive location (cool, damp locations are worst).

Control over the disease can be achieved by feeding hives with the drug fumagillan (Fumidil-B, and other trade names) mixed with sugar syrup. The drug

should be administered once in the autumn and again once in the early spring.

The use of this drug as a management tool should be based on sound knowledge about nosema and the current levels of the disease within hives. The high cost of the drug means that it is too expensive to feed on a routine basis to every hive.

To determine whether or not your hives have nosema, and at what levels, samples of bees should be tested from hives in which the bees exhibiting symptoms such as spring dwindle, dysentery, unusually aggressive behaviour, or swollen abdomens. Examination is easily carried out using a good quality microscope like those used by high schools.

Simply catch 10 bees from the hive entrance, remove their guts by grasping the stings with tweezers and pulling, add the 10 guts to 1ml of clean water, and macerate. Place a drop of the liquid on a glass slide and cover with a cover slip.

Place the slide on the microscope and examine at 400 times magnification. If you can see an average of 5 or more football-shaped spores per view in 5 different areas on the slide, then the concentration of nosema is about 100,000 spores per bee (general "rule of thumb"). Beekeepers should consider treating hives above this level of spores per bee, especially if hives are going to be split and/or used for queen mating purposes.

- Robert Rice, AAO, Lincoln

Bee News Around the World

North American Honey Price Soars - The big news currently affecting world honey markets is the decision by the US Department of Commerce to assess an anti-dumping duty on honey imported into the States from China. In March, the US government made a preliminary finding in favour of an anti-dumping case which had been brought against the Chinese by US beekeeping organisations. The US International Trade Commission (the same commission which determined that NZ kiwifruit was being dumped several years ago) found dumping by various Chinese exporters to be in a range of between 127 and 157%. The duty the Department of Commerce subsequently imposed on Chinese honey averaged 141% of the FOB price, raising the purchase price of that honey in the US from NZ$1.09/kg to NZ$2.66/kg.

The affect of the duty on North American honey prices was immediate, with one US producer stating that the price of his 1994 crop, which he was just selling, increased by NZ$0.17/kg in just one week. Prices also increased in Canada, with the bulk of this year's crop expected to sell at between NZ$1.71 and NZ1.86/kg, although sales in some areas were said to be topping NZ$2.44/kg (CND$1/lb). Canadian honey is likely to fill much of the vacuum in the US caused by the Chinese honey being priced out of that market.

The US Department of Commerce is now negotiating with the Chinese to establish a maximum volume quota and minimum price to govern Chinese honey imports to the United States for the next five years. A tentative agreement calls for a limit of such imports to 20,000 tonnes, with a minimum FOB price equal to 92% of the average price of all other honey imported into the US. The agreement would in effect roll back Chinese honey imports to the US to 1991 levels. If the agreement is reached, it will rescind the preliminary anti-dumping duty which has been imposed.

The question for the rest of the world, however, is where will the Chinese export the remaining honey they produce, and at what price?

Wasps Hit Wrong Target - A wasp introduced to control lucerne weevils in New Zealand has begun attacking the weevil introduced to fight nodding thistle, as well as a wide variety of native weevils, many of which have not yet been classified. The wasp was brought in from the Mediterranean in 1982 to fight the sitona weevil, which was infecting lucerne and had been very successful. Officials say, however, that the wasp should not have been introduced without stricter controls.

Source: Rural News, May 1, 1995

Anti-Inflammatory Drugs Risk to Beekeepers - According to the British Medical Journal, beekeepers should think twice before taking some anti-inflammatory drugs. The drugs may reverse their immunity to bee stings. During the last few years, several new nonsteroid anti-inflammatory drugs have been developed to relieve pain and reduce stiffness, swelling and joint pain. Such drugs include ibuprofen, fenprofen, naproxen, ketoprofen, sulindac, piroxicam, suprofen and tolmetin.

Beekeepers, of course, routinely develop immunity to bee stings, and there is a growing trend to treat symptoms of arthritis with bee stings. Recently, however, two cases have been reported of people with an immunity to bee stings who took a nonsteroid anti-inflammatory drug and then suffered serious allergic reactions to bee and wasp stings.

In one, a 66 year old beekeeper was prescribed an anti-inflammatory for osteoarthritis. A few months after taking the drug, she was stung on the wrists and within 15 minutes developed heart palpitations, a rash, and swelling of the mouth and tongue, making it difficult for her to breathe. She stopped taking the drug and 48 hours later she was stung again, without developing any reaction. In the other case, the wife of a beekeeper who began taking anti-inflammatories was stung by a wasp. Although she previously did not react to such stings, in this instance she required hospitalisation.

The article states that until more is learned about the reason for these reactions, beekeepers should be aware of the potential hazards associated with these drugs and bee stings.

Source: Internet BEE-L; British Medical Journal 292:378

Australia Intercepts Apis Cerana - Recently, a live swarm of bees was discovered by crew aboard a ship entering Brisbane Harbour from Papua New Guinea. The captain ordered the swarm to be destroyed, and then contacted agricultural quarantine officials, who inspected the swarm when the ship docked. The swarm was identified as the Asian hive bee, Apis cerana. Apis cerana is now found throughout Papua New Guinea. It is the original host of Varroa jacobsoni, an external mite which has wreaked havoc on colonies of Apis mellifera in a number of parts of the world. The report did not mention whether Varroa was found with the hitchhiking swarm.

Source: Australian Bee Journal, June 1995

Quelque 4000 Apiculteurs venant de 65 nations reunis Lausanne

(Translation: "some 4,000 beekeepers from 65 countries meet in Lausanne")

This was the heading from a local newspaper in the French-speaking area of Switzerland, where the 34th International Apimondia Congress was held August 15-19 1995. The Apimondia cocktail goes as follows: Take one city of 127,000 (size of Hamilton), add 200 commercial exhibitors, include 14 or more scientific sessions, add a dash of ceremony and folklore, and stir in 4,000 beekeepers speaking a plethora of languages.

There was much more of course - things like poster displays, hive demonstrations, films, field trips, specialist meetings, opening and closing ceremonies, general assembly meetings, an opportunity to meet old and new friends and business acquaintances, plus a whiff of controversy from the Executive Council (see November BeeFax).

Looking back, the impressions of the congress are still very vivid. This is only a very short list:

Lausanne is a very beautiful and very old city, but I don't know how people can afford to live in Switzerland. Coffee costs $3.30 per cup, taxi flag fall is $ 8.40, a 3 star hotel starts at $200 per night (single), and continental breakfast (buns and coffee) will set you back $20.

The congress was superbly run, considering the scale. But it was obvious that New Zealand could not easily host an Apimondia - we don't have the facility or the resources.

New Zealand had three very good trade displays: Comvita, Ecroyd Bee Supplies, and Happy Valley Apiaries, which combined with Mahurangi Hiveware. (Some Aussies were upset that they didn't have any trade displays).

It certainly was frustrating only being able to speak one language. (Ask Ken Perkinson of Mahurangi Hiveware how he solved that problem - I was really envious!).

For any "Tool-Time" junkie, the beekeeping equipment on display was fantastic. (Thomas & Sons from France brought their trade display in a couple of semi-trailers).

When will speakers ever learn that overheads or slides need to have only a few words and they need to be in BIG PRINT!

Border controls for passengers in Europe and the UK are almost non-existent - (so why do they worry so much about export certification?)

Varroa is a huge burden to beekeepers in America, the UK and Europe.

- Murray Reid, AAO, HAMILTON

Do Bees Have Ears?

Can bees hear? Since 1945 we have known that bees can at least "feel" sounds that are transmitted through the material on which they are standing. These vibrations are picked up in the bee's subgenital organs located in the bee's knees(!) But the real question is can bees truly "hear" sounds for which they feel no direct vibrations? Many researchers have carried out experiments to see if bees can hear airborne sound. The conclusion was that bees are, in fact, deaf. At least that was what scientists thought up to just recently. Now,

however, an intriguing set of experiments has shown that bees can indeed hear, and that they even have sense organs which act as ears.

Sound travels through the air in two ways: by oscillations in air pressure, and by oscillations of air molecules. Humans and many other animals detect sounds by pressure oscillations falling on the ear drum. Some animals, however, detect sound by the oscillation of air molecules. Bees, it turns out, fall into this latter category.

Two scientists, Towne and Kirchner, provided the first direct evidence that bees could hear airborne sounds. They trained bees to a feeding station that was wired so it gave the bees a mild electric shock. When the bee were shocked they withdrew from the feeding station momentarily. The researchers then played a sound for a period of five seconds just before the electrical shock was administered. The bees slowly learned to withdraw from the feeding station when they heard the sound, thus avoiding the shock. In this experiment the bees learned slowly, however. It often took an entire day until a single bee learned to avoid the shock at least 50% of time it visited the feeder.

A new training experiment was therefore designed to see if the bees could be trained more quickly and effectively. The experiment consisted of a "Y" maze, with scentless sugar syrup placed at the end of one arm of the "Y", and a speaker playing a sound down the other. Within one or two hours of training, 80% of the bees had made the correct choice and had received the food reward. The experiment was repeated in all possible speaker/food combinations with the same result each time.

With this new experimental method, the scientists found that bees can hear sound at low pitches up to about 500 hertz. This compares to humans, who can hear sounds up to 1,200 to 1,600 hertz. However, the bees' sense of hearing shown in the experiments was certainly good enough to allow them to perceive the intense, low frequency sounds which are emitted in the waggle dance used by bees to communicate outside food sources (approx. 250 hertz). Bees, however, don't appear to be very sensitive to sound. It isn't known exactly how sensitive a bee's hearing is, but it would appear that the bee can only hear sounds that are close by.

The researchers where also able to determine what part of a bee's body actually senses sound. The air particle oscillations vibrate the antennal flagellum. This is the section of the antenna from the end to the pedicel joint, about half way up the antenna. The vibrations of the flagellum are detected by organs in the pedicel joint known as the Johnson organs, and transmitted to the brain by the antennal nerve. The same organs have also been found in other insect antennae and have been shown to be used in hearing in some flies and mosquitoes.

The question now, of course, is what do bees use their sense of hearing for? Since this airborne sense of hearing has been discovered in bees only recently, not a great deal is currently known about what bees use their hearing for. We know at least, however, that sound plays an important part when recruiting forager bees during the waggle dance. It appears that recruit bees listen to the dancing scout bee during the straight waggle section of the dance. This part of the dance has long been known to be important in communicating the direction and distance of a food source. In experiments where scout bees were trained to a feeding station, recruit bees that had their hearing organs removed did not fly out to the food source. Bees that had their hearing impaired arrived at the feeding station in smaller numbers and later then bees that left with normal hearing.

As time passes I'm sure we will learn more about this exciting discovery, and maybe the bees will give up a few more of their secrets to those of us who are so fascinated by what these tiny creatures can do.

- David McMillan, AAO, Invermay

HONEY Bees on the Information Superhighway

It wasn't so long ago that both the fax machine and cell phone were regarding by many beekeepers as expensive toys which were only suitable for big companies and corporate highflyers. Now, however, a growing number of commercial beekeepers are finding they can hardly live without these technological marvels. The fax has turned into an extremely cost-efficient alterative to both phone calls and the post. And the cell phone is rapidly replacing the RT in many beekeepers' trucks.

As telecommunications continues to change our daily lives, the next big thing on the horizon is likely to be the "Information Super Highway". The Super Highway is a means by which we can communicate with each other via computer, using normal phone lines and links through satellites. The term which has been coined for this communication is "email", short for electronic mail, and companies and institutions around the world are jumping on the bandwagon. The reasons are obvious: email can cost considerably less than any other form of communication;

Another feature of email is the ability to connect with information networks. The biggest and most famous of these is the INTERNET network, a communication system which was first set up by the US military, but which today links some 20, 000 public and private computer networks. By accessing such networks, you can gain information stored in databases on a huge number of subjects, and communicate via "bulletin boards" with other people around the world who are interested in the same topics.

Beekeeping has several of its own bulletin boards. The original and most active one, which has the somewhat unfortunate name "BEE-L" (for "bee list", not Bacillus larvae!), is a worldwide discussion group linking beekeepers, apiculture researchers, and government beekeeping extension and regulatory personnel. Once you put your email address on the computer list (called " subscribing"), you receive all non-personal communications ("postings") within the group, and you can also ask your own questions on any beekeeping subject. Quite often one person's question will result in a number of interesting responses, and generate further questions, bringing other people into the discussion. BEE-L also carries several very interesting beekeeping newsletters from the US.

To give you something of the flavour of BEE-L, what follows is a list of topics which were discussed in postings to the bulletin board on just one day several weeks ago: feeding high fructose corn syrup to bees; use and maintenance of extractors; how to remove bee colonies from walls; how to use long tubes as entrances for observation hives; control of wax moth; bees and red clover; bee sting allergies; and a really interesting posting, which has gone on for some weeks, entitled "The Frugal Beekeeper" (ie, ways to save money and time when beekeeping).

Once you see someone's email address on BEE-L, you can also communicate with them one-to-one via email. In fact, if a person has a valid email address and is connected to INTERNET, you can send private messages to them, no matter where in the world they are.

You can even send a message to President Clinton. Several years ago he sent a message to all BEE-L subscribers outlining his reasons for not granting a tariff on Chinese honey imported into the US. In case you're interested, his address on the INTERNET (which is a good example of what email addresses look like) is: president@whitehouse.gov.

Don't expect to get a personalized answer, though!

Next month: how to access the Internet and how to subscribe to BEE-L

- Cliff Van Eaton, AAO, Tauranga

Gadgets and Gizmos

Folding Bulk Food Container - A high-tech packaging company in Auckland, Transpak Industries Ltd, has developed a plastic container which can increase the amount of liquid which can be packed in a given area by up to 25 percent. The bag is rectangular in shape (with a raised spout) and has a seven layer plastic bag incorporating an inner ring of plastic film which can absorb the stresses generated by the weight of the product. The collapsible bag also has handling and disposal advantages. The bag folds into a small parcel, saving significantly on storage and reshipping costs. The bag was developed by a Dutch inventor, but Transpak has purchased the rights and is pursuing world patents for the design. For more information contact Transpak Industries Ltd, PO Box 33-347, AUCKLAND fax (09)444-1151.

4x4 Conversions for Big Trucks - For a lot of beekeepers, the ultimate vehicle would be a 3 or 5 tonne Canter, capable of carrying 70 or so hives, which didn't get stuck in paddocks or boggy tracks. Recently, several beekeepers have been able to purchase used Japanese import Mitsubishi 3 tonnes with four wheel drive, which from all accounts work great. There is also another option, however; converting your existing truck to four wheel drive. We understand that Blair's Auto Parts in Christchurch does 4x4 conversions for small buses, etc. used in the ski trade, and can also do such conversions on beekeepers' trucks. For more information, contact Blair's on (03)348-0729.

Hang Tags - The National Honey Board in the US is working in a number of interesting areas to help market honey in that country. The Board has also cooperated with our own Honey Marketing Committee on various aspects of the New Zealand honey marketing plan. One of the board's ideas which may be useful here is the "hang tag". The tag is a full-colour, eight-panel mini-brochure which includes honey use and storage information, as well as four easy-to-make food recipes using honey. The front panel features the US industry's logo, a Winnie-the-Pooh-like honey bear, with the message "Let's Get Cooking". The tag folds to 65x65mm and has an elastic cord for easy attachment to the necks of a variety of honey jars. We don't know if the tags would be available direct to the New Zealand industry, but the idea could certainly be applied here. For more information, contact the US National Honey Board, 390 Lashley St., Longmont, COLORADO 80501, fax 001(303)777-1177.

BEEFAX

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November, 1995

World Trade in Bees and Bee Products: Apimondia 1995

The International Bee Research Association (IBRA) organised a Plenary Session on the world trade of bees and bee products at this year's Apimondia Congress in an effort to stimulate world debate on non-tariff trade barriers.

The symposium was organised and chaired by Andrew Matheson, formerly Apicultural Advisory Officer in Nelson and Tauranga, and currently Director of IBRA. Speakers at the session came from a range of important beekeeping countries, including Canada, USA, Switzerland, Mexico, Poland and New Zealand (Allen Bougen of Comvita NZ, Ltd., and Murray Reid from MAF Quality Management).

The session began by reviewing patterns in honey production and trade . World prices for honey have risen dramatically lately but there is an urgent need for better statistical information.

The session was also told about the successes that can be achieved by niche marketing bee products; and all bee products, and not just honey. Speakers also emphasised the need to be flexible and responsive to changing conditions, especially in the trade in live bees. To be responsive it is essential, the speakers said, to be very well-informed.

The symposium also examined several important global issues, including the help provided by the International Trade Commission for exporters from developing countries, and the effect of moving to market economies in countries which were formerly under central control (eg, Eastern Europe).

The meeting also heard some hard-hitting references to new agreements governing world trade. The global environment on trade issues is changing, and it is important for the beekeeping industry to take these changes into account.

Trade Barriers

The topic of my paper, which was jointly prepared with Dr Stephen Ogden of the MAF Regulatory Authority, was "Liberalisation of World Trade in Bees and Bee Products". We looked at the main principles of the Sanitary and Phytosanitary Agreement (SPS) signed by the World Trade Organisation (WTO) in 1994, and tried to summarise what the agreement means to importing and exporting countries. New Zealand is a member of the WTO, as are most of our trading partners.

In an ideal world,, trade is between two partners, a willing buyer and a willing seller, which should be allowed to proceed unhindered. This process usually does occur (more or less) inside a country, or within a trading bloc.

However, our world is not ideal, and barriers are put up which hinder trade between otherwise willing parties. These barriers may be formulated and operated by governments, but governments can be influenced by voters when it

comes to protecting their own borders and markets. Often these restrictions are dressed up with science to make them look respectable, but in fact they are there to give unfair advantage to one part of the community over another.

The new round of GATT (the General Agreement on Tariffs and Trade), and the new World Trade Organisation which GATT created are designed to break down protective barriers (especially non-tariff barriers).

GATT and the WTO are intended to ensure that countries are not allowed to replace one set of barriers (such as tariffs or unjustifiable zoosanitary requirements) with even more undesirable barriers based on quality or sanitary measures.

I only had time to discuss four of the principles set out in the WTO's SPS agreement. The SPS agreement applies to all agricultural products and animals, including honey and live bees:

i) Necessity - "WTO members shall ensure that any sanitary measure is applied only to the extent necessary to protect human, or animal health, and that it is based on scientific principles and is not maintained without sufficient scientific evidence...Sanitary and phytosanitary measures shall not be applied in a manner which would constitute a disguised restriction on international trade".

ii) Risk Analysis - This principle states that "members shall ensure that their sanitary measures are based on an assessment of the risks to "bee" health, taking into account risk assessment techniques developed by relevant international organisations." In other words, managed risk, not zero risk.

iii) Equivalence - "Members shall accept the sanitary measures of other members as equivalent, even if these differ from their own..." provided that the exporting country demonstrates to the importing country that the measures achieve the same level of sanitary protection.

iv) Non-discrimination - The fourth principle discussed says that "WTO members shall ensure that their sanitary measures do not discriminate between members where identical or similar conditions prevail..."

As exporters of bees and bee products know, there are many import conditions required by other countries which are not based on a sound scientific evidence and which do not currently conform to the WTO Sanitary and Phytosanitary Agreement.

New Zealand's challenge as a trading nation is to encourage all governments to abide by the spirit of GATT. We should encourage those governments, and appropriate international organisations, to develop technical guidelines and databases to allow sound decision making. We should also encourage all signatories to GATT to incorporate scientifically sound standards and conditions into their trading requirements. Whether we are consumers or producers, we are all entitled to a level playing field.

Resolutions were drafted as a result of the Plennary Session to go forward to the General Assembly of Apimondia. Bbut first they have to go to the Standing Commission on Beekeeping Economy. I'm not sure how they will survive that process, but there is an urgent need for expert bodies to review a) the list of bee diseases considered significant in world trade, b) the methods used to detect these diseases, and c) their implications in the trade in bees and bee products.

The National Beekeepers Association, in conjunction with the government of New Zealand, has a leading role to play in advocating New Zealand's position on the trade in bees and bee products for exports as well as for imports.

- Murray Reid, AAO, HAMILTON

[Editor's note: copies of the paper mentioned in Murray's article can be obtained from any MAF Qual AAO.]

SECOND AAO FOR PALMERSTON NORTH

People are always interested in new blood when it flows into an industry, and so to answer a few of the invariable questions, I have been asked to introduce myself to the New Zealand beekeeping community.

My name is James Driscoll, and I have recently been appointed to the position of Apicultural Advisory Officer in Palmerston North. And to set the record straight from the beginning, no, Ted Roberts hasn't retired! I will be working alongside Ted to help provide a range of apicultural services in the southern North Island.

I have always been interested in the New Zealand rural scene, and I have a strong interest in primary industry. My rural work experience began during school holidays on farms in the Cambridge area. This early exposure led to work within the stock and station industry, and I completed a NZ Stock and Station certificate in 1988. I then took on a management position within a stock firm. However, I eventually came to the realisation that I wanted to earn a university degree. I attended ?????University graduated in 1992 with a BSc in Biological Science. In 1995 I also earned an MSc in Biological Science, which I completed after a year travelling overseas.

My decision to apply for a job as AAO came about when, as a beekeeper, I was having a chat with Murray Reid regarding apiary registration and permits to seel hives. Murray mentioned that a position was becoming available in Palmerston North, and following a series of interviews, I was fortunate enough to secure the job

As of the September 1, I will be riding shotgun with Ted Roberts in MAF Quality Management, inspecting beehives, carrying out pollination audits, and undertaking surveillance for exotic bee diseases. I look forward to meeting many of you in the months to come.

Copper Sulphate As A Timber Preservative

Beekeepers are always on the lookout for low-cost, effective ways to preserve the wood they use in beehives. Copper is the active ingredient in timber preservatives such as Tricunol, and the green form of Metalex (there is also a clear form of Metalex which uses zinc). So I decided to experimented with a less expensive solution of copper sulphate and potassium dichromate solutions to treat some woodenware. I treated a number of nucleus boxes more than 15 years ago and the boxes are still going well.

Copper sulphate, or bluestone, is product which is widely used on farms to control footrot. The copper sulphate in the woodenware treatment acts as the fungicide, while the dichromate (sodium or potassium) does the job of a fixative. Copper sulphate and dichromate are the main ingredients in products such as Tanalith, Hagar, Boliden, K33, Osmosar, etc. However, these products

also contain arsenic, which acts as an insecticide, and it is important to be careful when using arsenic treated timber when making beehives. Bees are insects, after all, and there is a potential to contaminate hive products.

I found the dichromate difficult to buy in small quantities. It is also very acidic and "ate" right through a 20 litre tin can I was using to soak the timber. So I resorted to using just copper sulphate as a 5% solution in kerosene (????????) (50 gm per 1 litre or 1000 ml), followed by paraffin waxing and/or painting to stop the copper leaching out of the timber.

As with all chemicals, it is important to be careful when both using them and disposing of any residues and containers. If you plan to seek Biogro registration, I would also suggest that first check out the status of copper sulphate before treating any woodenware. Copper sulphate is not specifically restricted for bee equipment, although Metalex is. Biogro does allows bluestone to be used as an animal remedy.

Murray Reid, AAO, Hamilton

Bleached-Blonde Wax

Beeswax, when secreted from the wax glands of honey bees is almost pure white. But colour can begin to change as soon as the wax scales come in contact with the multitude of products found in a colony, such as pollen oils and other hive contaminants. Some pollen oils have little effect on colouring wax, while others readily cause colour change as the oils are absorbed into the wax. Older brood combs also produce a darker wax because the wax has come into contact with a number of discolouring agents, not the least of which are the generations of larval skins which make up much of the dark comb.

Candle makers, and others who use or buy wax generally prefer very light coloured wax. One way to lighten wax is to allow blocks to sit out in the sun. The sun has a certain bleaching affect, although the results can be mixed.

Another way to lighten the colour of wax is to treat it with hydrogen peroxide. The magazine Bee Culture recommends the addition of 120ml of 3% hydrogen peroxide (H_2O_2) to 1kg of beeswax heated to 75oC. Hydrogen peroxide in this form can be purchased at most chemists, and at this concentration is easy to use.

Once the hydrogen peroxide is heated in the wax, agitate the mixture by stirring continually. A bubbling action will begin as the free oxygen (one of the O's in O_2) is released. This action reacts with the organic contaminants colouring the wax, causing them to oxidize and separate from the wax. After 15 minutes, there should be a noticeable clarifying of the wax. When the peroxide has been expended, the bubbling will cease. The residual will be water (H_2O), that will settle to the bottom of the container, along with any foreign matter. Then strain the molten wax through muslin or similar, and allow the wax to cool. The result will be a clean, bright, lighter block of wax. If desired, a repeat of the process will further lighten the colour. The same process can also be used on larger quantities of wax. Just increase the amount of peroxide used accordingly.

THE MAF RA Decision Made on the Importation of Australian Honey

On the May 17, 1995, Dr. Barry O'Neal, the MAF Regulatory Authority's Chief Veterinary Officer, issued the government's decision on the importation of

Australian honey into New Zealand. The decision was announced publicly, and a letter and copy of the decision document was sent to everyone who had made submissions on the discussion document. Although the decision was announced in May, the decision itself was dated February 15, 1995. The original draft conditions which started the process were issued on February 4, 1992.

During the intervening three years, it would be fair to say that an awful lot of water had passed under the bridge! There have been submissions, a risk analysis, more submissions, another risk analysis, more submissions, a discussion document, more submissions, and finally the decision itself.

Many beekeepers are still unaware of the content of the decision, so what follows is an outline of what is in the decision document:

1.European Foulbrood (EFB)

Until future scientific research establishes:

a) the minimum infective dose for Melissococcus pluton (the causative agent of EFB), and

b) the time temperature parameters for effective heat treatment,

then honey can only be imported from regions or States known to be free of EFB (ie, Western Australia).

2. American Foulbrood (AFB)

When the Pest Management Strategy (which aims to eradicate AFB) becomes operational, then there will be a requirement that imported honey does not contain an infective dose of Bacillus larvae (the causative agent of AFB) spores.

3. Chalkbrood

Until evidence is produced that the introduction of the Australian strain of chalkbrood will have no detrimental effect on the NZ disease situation, then any honey from chalkbrood regions or States must be heat treated to ensure that chalkbrood spores are inactivated. This would currently apply to all States except Western Australia.

4. Antibiotics

Honey imported from Australia will need to be subjected to an approved antibiotic residue programme, unless it originates from a region or State where antibiotics are not used and EFB is not present. (ie, Western Australia)

5. New Zealand Food Regulations

Imported honey must also comply with the NZ Food Regulations 1984.

But what does the decision really mean?

It means that honey could be imported from Western Australia, subject to compliance with the NZ Food Regulations, at any time now. When the AFB Pest Management Strategy becomes operational, then Western Australia will have to demonstrate that honey to be imported to NZ does not contain a minimum infective dose of AFB spores.

No honey can be imported from the eastern States of Australia until a) the minimum infective dose for EFB has been established, and b) the time/ temperature treatment necessary to reduce EFB below the minimum infective dose has been established. This is likely to take some time.

Was all the effort on the part of the government and the New Zealand beekeeping industry worthwhile?

I believe it was, because the original draft protocol proposed by the government offered little or no protection to the NZ beekeeping industry from unwanted disease-causing organisms. What we have now does offers reasonable safeguards against the introduction of EFB, and recognises other concerns regarding AFB, chalkbrood and antibiotic residues. It also levels the playing field with regards to "Food Regulations"

In the modern world of GATT and the freeing up of world trade, the NZ beekeeping industry has much to gain. We must, however, be prepared to accept that the "GATT knife cuts both ways". We must insist that our export markets justify any restrictions placed on us. But by the same token we must justify any conditions that we wish to place on imports. I believe the decision on Australian honey imports does this, and is a good indication of how we must handle these issues in the future.

- Ted Roberts, AAO, Palmerston North

Varroa - Again

If you read overseas bee magazines and research journals it seems that more than half the articles are on Varroa and its control. And with good reason, I might add.

At Apimondia there was a full Plenary Session on Bee Pathology as well as three specialist meetings. Many of the papers at the plenary session were on Varroa and two of the specialist meetings were solely on Varroa. These meetings discussed the tolerance of honey bees to Varroa, the resistance of Varroa to chemicals, as well as the problems with residues.

Beekeepers have learned the hard way that if they don't treat their hives with chemicals then the colonies die from Varroa. Researchers are, however, finding some hives that appear to be resistant to the mite, either because the bees remove many of the mites, the bees are more tolerant of associated viruses, or the mites may not be reproducing to their full potential (as Denis Anderson has found in Papua New Guinea).

However, there are many problems with Varroa and its control, including:

* Misuse or improper use of chemicals.

* Resistance of mites to certain chemicals.

* Contamination of wax, propolis and sometimes honey with chemical residues.

* Cost of non-chemical integrated pest management systems (eg, removing drone brood).

* Toxicity of some alternative chemicals, for example formic acid.

* Getting chemicals registered for use.

* The cost and practicality of developing and introducing resistant strains of bees.

To give you an idea of the cost of using Apistan strips, a recent worldwide discussion on the Internet came up with an average price of $40 per 10 strips (range $25-$70). One strip is required per 5 frames of brood, so a beekeeper might need up to 4 strips per colony, or $16 per treatment. And two treatments per year may be required - one in the autumn after the honey crop is removed, and another in the spring. The manufacturers also state that the strips should not be reused. So, depending on the strength of the hive and the infection level, for each beehive a beekeeper would need a minimum of 2 strips per year ($ 8), and a maximum of 8 strips ($32).

Varroa is one beast New Zealand beekeepers really do not need.

Murray Reid, AAO, HAMILTON

CALIFORNIA WEATHER BEATS POLLINATION

Last spring, California. which produces 55% of US fruits and vegetables, was hammered by some the worst weather this century. The result has been one of the worst almond pollination's on record. California almond growers producer 330 million kgs of almonds each year, which wholesale at NZ$5.75/kg. Because of poor weather, which kept the bees in their hives for a prolonged period of time, growers are this year expecting only 195 million kgs. Over a half million beehives are used to pollinate almonds in California each year.

Source: The Speedy Bee, June 1995

BEEFAX

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EDPR - NOW AND THE FUTURE?

If an exotic bee disease (ie, one that we do not already have in NZ) were to be discovered in NZ tomorrow, a contingency plan would swing into action to deal with it. The diseases and pests for which plans exist are European foulbrood, parasitic mites (Varroa, Acarine and Tropilaelaps), and the Africanised honey bee. These plans make up the MAF Quality Management (MQM) exotic pest and disease response system, or EDPR for short.

The response would start with a confirmed diagnosis of an exotic disease. Upon receipt of an initial report on the situation from the local Apicultural Advisory Officer, and after consultations with the National Manager Apiculture for technical advice, the Chief Veterinary Officer of MAF Regulatory Authority (MAFRA) would declare a controlled area around the outbreak, within which the movement of hives, bees and bee products would be prohibited without a MAF-issued permit.

The beekeeping industry would be advised as soon as the positive diagnosis was received, and a Bee Disease Advisory Committee made up of NBA representatives and MQM staff would be convened to provide the Chief Veterinary Officer with advice on the handling of the outbreak as it affected the beekeeping industry.

Within or close to the outbreak area a response headquarters would be set up. This would be managed by a Headquarters Controller. Headquarters would be staffed with MQM personnel who have been trained in tracing and movement control, a press officer to handle media enquiries, administration staff to provide logistical support, and an attached laboratory to analyse collected samples. Field teams operating out of the headquarters would be managed by an operations group, and the information provided by the field operations would be handled by the survey/information group. All of these groups would be assisted by a technical advisor, who would be an experienced Apicultural Advisory Officer trained to provide information on disease epidemiology, bee biology and the beekeeping industry.

Operating out of the headquarters would be 10 to 20 field teams, each made up of a MQM officer and two or three experienced beekeepers. These teams would do the actual inspections of hives to first find out how widespread the disease was (called the delimiting survey), and then to carry out appropriate eradication or control activities.

As you will be aware, MQM has only a limited number of staff with beekeeping experience. But by drawing together a group of staff trained in response procedures for foot and mouth disease and fruitfly, a very effective response capability can quickly be called upon. Those of you who have taken part in the joint exercises at Christchurch, Tauranga or Palmerston North, where we operated a headquarters and inspected for AFB to practice our exotic disease procedures, will know how effective this system can be.

What I have described very briefly above is the system as it exists now. The performance standards required are determined by MAFRA, while the operational plan to be followed by MQM (the delivery agency) is set out in a manual called " Honey Bee Exotic Disease and Pest Response Procedures". The legal authorities to carry out these activities are contained in the Apiaries Act.

On the first of July 1996, however, most of the provisions of the Apiaries Act, including those relating to exotic disease response, will be repealed. That is, there will no longer be any legal obligation on the part of the MAFRA, MQM, or anyone else for that matter, to do anything should there be an outbreak of an exotic bee disease.

Responses to exotic diseases will, from that date, be handled under the Biosecurity Act. This changes the rules somewhat. Control of unwanted diseases must then be done through a Pest Management Strategy. Our industry is just completing one of these for American foulbrood.

Pest Management Strategies can either be prepared by the Minister of Agriculture, if he is convinced that the introduction of the pest would cause significant economic loss and the benefits from having the strategy outweigh the costs, or they can be prepared by an affected industry such as the NBA.

At the moment, Pest Management Strategies are being prepared for vesicular diseases (foot and mouth and related diseases) and fruitfly, to take effect from July 1, 1996. Although it has not been announced, the expectation is that funding of training, and the delivery of a response for these pests and diseases will come primarily from government.

Unfortunately, time is running out for the beekeeping industry to either prepare its own Pest Management Strategy for exotic bee diseases (including coming up with funding), or to persuade government that it would be in the public good to have this work funded by the taxpayer.

Rapid response is critical if a new organism is to be eradicated before it becomes too widespread. This is only possible, however, if a contingency plan is in place and trained staff are available to carry it out. MQM has both of these now, but will not have them for much longer unless the affected parties get together and discuss arrangements for funding after July 1996.

- Derek Bettesworth, AAO, WHANGAREI

CAR ALLOWANCE TAX CHANGES

The July issue of Inland Revenue's "Tax Update" gave notification of a change in the tax-free reimbursement rate for private vehicles used for business purposes. Public servants who used their cars on business were previously paid rates determined by the State Services Commission. Inland Revenue (IR) also accepted these rates for small businesses such as beekeeping enterprises where a vehicle was used for private as well as business purposes (provided a log was kept).

As from 1 August 1995 the tax free level set by IR is:

56 c per km (up to 3000 km) and 19c for each km over 3000 km or a flat rate of 26c per km.

If you claim the State Services rates (which are higher), the difference will be assessed as income and taxed accordingly. Make sure you change your end of

year accounts to reflect this. We would also recommend that you contact your accountant to discuss the tax implications before choosing to use the old State Services rate.

STEAM CHESTS DON'T KILL BL

A beekeeper, without the knowledge of MAF, had been using a steam chest at atmospheric pressures to treat AFB-contaminated equipment. However, he was still getting re-infection when he re-stocked his hives. So he decided to send in a sample of treated material to the Hort Research lab at Ruakura to test for Bacillus larvae spores. The equipment comprising the sample had been steamed for one and a half hours.

At the lab, the equipment was washed and the resulting material plated. According to our sadder-but-wiser beekeeper the plates were 'red hot'.... there were enough Bacillus larvae spores on the gear to start a good infection.

These results support what we in MAF have always said about Bacillus larvae sterilisation. The only approved way to kill B.larvae spores is by "cooking" equipment in paraffin wax at 150oC for at least 10 minutes. Many beekeepers have had experiences of beehives being reinfected from steamed equipment, but have never been sure until now whether the fault was caused by improper steaming or the restocking of such beehives with infected bees. There are still plenty of good beekeeping reasons to use steam chests, but it looks like AFB control isn't one of them.

HEARD AT CONFERENCE . . .

I don't know about the rest of you, but this year I missed those quotable quotes that always seem to get published after the NBA Conference. There's a lot of wit, and also some gems of wisdom that come from the conference floor, so here's my belated collection from Christchurch:

"I may have changed my mind on this remit. Mind you, some members here might suggest that my mind needs changing."

"If we ask for a 'yes' vote on this remit, we'll be asking the executive to do something it can't possibly do. So we can actually vote for the executive not to do something!"

"I would suggest that this vote be conducted with a secret show of hands."

"We have to decomoditise our beekeeping products. Otherwise, we're on the end of a piece of string and somebody else is pulling it."

"We all know the difference between a weasel and a stoat. One is "w'easily" recognised, and the other is "s'totally" different."

"Dreams cost money, and most of the payments are up-front."

DISEASEFAX - European Foulbrood

European foulbrood (EFB) is caused by the bacterium Melissococcus pluton. M. pluton is a lanceolate-shaped (narrow and tapering at both ends) bacterium, occurring singly, in clusters, or in chains of various lengths. It is also Gram positive, meaning that it retains a particular stain used to identify

types of bacteria.

When a bacterium was first suspected to be the causative agent of European foulbrood, the organism was named Bacillus pluton. Subsequent isolation and characterisation of B. pluton, based on size measurements and its inability to form spores (characteristics of the genus Bacillus), resulted in the bacterium being renamed Streptococcus pluton by Bailey in 1957. Recent work, studying aspects of its biochemistry, has excluded it from the genus Streptococcus, and has now defined the organism as the type species of a new genus called Melissococcus.

Life Cycle - Worker, drone and queen larvae are all susceptible to infection by M. pluton. Nurse bees transmit M. pluton between larvae during feeding. The bacteria contaminate the mouth parts of nurse bees and hence the food fed to the larvae. An infection may occur at anytime while the larvae remain uncapped. The larvae ingest the bacteria, ingestion usually occurring 48 to 72 hours after the larvae hatch. Multiplication of M. pluton occurs close to the surface of the peritrophic membrane, in contact with the food of the larvae. The peritrophic membrane is a sack-like structure that lines the bee's gut.

M. pluton actively competes with the larva for the food secreted by the nurse bees, and absorbs its nutritional requirements from the food. As growth of the bacterial mass continues, it extends toward the centre of the larva's gut. There is disagreement as to whether bacterial growth is entirely restricted to the peritrophic sac, or whether the bacteria destroys the peritrophic membrane, invading the cells in the wall of the gut (called the epithelium). Unable to compete with the expanding bacterial mass for food, the larva dies of starvation. Larvae usually pass through the fourth day of development before death occurs. Death normally occurs 2 days after infection.

Secondary Infections - Death of the host may be accelerated by secondary bacterial infection. The most common of the secondary bacteria is "Bacterium eurydice". Other secondary bacteria found in association with this disease include Bacillus alvei, Bacillus laterosporus and Streptococcus faecalis (formerly Streptococcus apis). S. faecalis is similar in appearance to M. pluton, but serologically and culturally distinct.

Infection Cycle - Once ingested, M. pluton multiplies rapidly in the anaerobic environment of the larval midgut. Most larvae become infected with M. pluton during the third day of larval development, dying two days later. Larvae that become infected after the third day of their development may survive and pupate. When this happens the M. pluton bacteria are discharged with the faeces and deposited on the cell walls of the brood comb.

Faecal deposits occur mainly at the base and cappings of the cell, the bacteria within remaining infective possibly for several years. Nonlethal infections of larvae result in pupae of subnormal weight. These pupae generally have poorly developed silk glands and spin feeble cocoons. The bacteria are spread from the exposed faeces of infected larvae. The faeces of healthy larvae usually remain sandwiched between the layers of the better constructed cocoons.

The majority of bacteria are removed by house-cleaning bees. However, remaining bacteria contaminate the larval food supply, thus maintaining the infection, often at a subclinical level. The presence of microscopically undetectable, subclinical infections of M. pluton in apparently healthy Australian beehives has been demonstrated using an ELISA (enzyme-linked immunosorbent assay) test. The results of the ELISA test showed that an infection may persist for many years without visible signs of disease.

A balance may develop within infected colonies between the rate of production and dissemination of M. pluton and the removal of bacteria and infected larvae, with the larvae often being removed before symptoms of the disease are visible. The level of M. pluton within the colony fluctuates, linked to the availability of the hypopharyngeal protein food secreted by the nurse bees. It has been shown experimentally that when larvae receive excess amounts of glandular food, infected colonies keep proportionately more infected larvae than usual. Conversely, when larvae are starved for glandular food, infected colonies remove more infected larvae than usual.

EFB Outbreaks - Interestingly, EFB outbreaks can occur both in times of reduced colony growth, and during nectar flows.

M. pluton often persists as an endemic subclinical infection throughout most of the year. During colony expansion in the spring, environmental conditions such as inclement weather, or other events that interrupt nectar flows, may impede colony growth.

During this interruption in colony growth the level of M. pluton increases in response to the temporary abundance of nurse bees and hence the food available to the larvae.

When the nectar-flow begins again, brood rearing increases and the amount of glandular food available to larvae decreases, since during flow conditions younger, potential nurse bees are recruited earlier into foraging activities. The decrease in availability of glandular food is linked to 1) the lag between the increase in egg laying by the queen and the availability of young nurse bees to feed the developing larvae, and 2) the recruitment of nurse bees to foraging activities.

Under these conditions infected larvae, which are in competition for food with M. pluton, starve and die. The rate of larval death begins to exceed the bees' ability to detect and remove these larvae, resulting in an outbreak of the disease, as evidenced by the presence of dead larvae within the brood combs.

Mode of Dispersal - M. pluton is dispersed through both natural and artificial means. Typically, though, the bacteria are spread by the beekeeper during normal hive management practises. The known modes of disease dispersal are :-

The practise of interchanging hive components (particularly brood combs) between hives

Healthy colonies robbing diseased colonies of honey (M. pluton is transmitted in honey)

Drifting of infected bees from diseased to healthy hives

Contamination of healthy colonies by forager bees through the use of common watering places or open sugar feeders (infected bees may fall into or defecate in the water)

Feeding of contaminated honey

The Australian Experience - European foulbrood was confirmed in eastern Australia in September 1977. Within 12 months EFB had spread to all eastern states. The rapid spread of EFB was attributed to the migratory nature of Australian beekeeping, with the disease spreading from apiary to apiary by both natural and artificial means.

A 30km wide quarantine corridor between Victoria and New South Wales was not respected by all beekeepers and did not stop the advance of EFB into New South Wales. Quarantine measures also failed to stop EFB from spreading from NSW into Queensland, and eventually into Tasmania in July 1984.

The presence of this disease has resulted in a significant increase in the operating costs of the Eastern Australian beekeeping industry, with the need to control EFB using antibiotics.

Threat To New Zealand - There is no available data in refereed scientific journals concerning the rate of dispersal of M. pluton within hives, between hives, or between apiaries. Nor has the minimal infective dose of M. pluton needed to induce infection been determined. However, as reported in Australia, EFB is highly contagious and once established in a country can spread rapidly. The Australian experience also demonstrated that the spread of EFB between hives and apiaries of an individual beekeeper is most likely to occur by artificial means, while the spread of EFB between beekeepers will occur by natural means.

Evidence does suggest that regional hive density influences the rate at which EFB spreads by natural means. In Australia, EFB spread almost as quickly between beekeeping operations as it did within them. It appears that the greater the regional hive density, the faster EFB spreads within the region. As in Australia, regions in New Zealand that are highly productive for honey have high regional hive densities. In Australia these highly productive regions are ever-changing and seasonal, with the beekeepers moving their hives into productive areas for several weeks as they follow the honey flows.

As in Australia, most of the highly productive honey areas in New Zealand also attract large numbers of beehives. Unlike Australia though, New Zealand beekeepers generally are non-migratory and so these highly productive regions contain large numbers of hives on permanent apiary sites. The two exceptions are the migration of hives for pollination and the collection of honeydew.

While most New Zealand beekeepers are non-migratory, many of the larger beekeepers maintain apiaries in several regions, and in so doing they mimic the migration of beehives and hence the spread of the disease by moving beekeeping equipment between these regions.

Therefore, the dispersal of EFB in New Zealand would likely parallel the dispersal of EFB experienced in Australia, with the disease spreading quickly throughout New Zealand. Additionally, regardless of which Island becomes infected with EFB first, the other Island would become infected, paralleling the spread of EFB from mainland Australia to Tasmania. The most likely avenue by which the disease would spread from one Island to the other would be via the shipment of live bees (particularly queen bees), as was the case in Australia.

- Robert Rice, AAO, LINCOLN

GADGETS AND GISMOS

New GPS Available - The GPS (Global Positioning System) is a constellation of 24 radio navigation satellites that enables users to pinpoint their position anywhere on earth, any time of the day, and in any weather conditions. A GPS receiver can tap into a $14 billion resource free-of-charge.

Until recently, all GPS receivers gave readouts in longitude/latitude. However,

within two months Trimble New Zealand will be bringing on to the market the " Scout Master GPS". This is a small hand-held unit (about the size of two cigarette packets!), which will have the option of data input and output in New Zealand Map Grid, the same grid used when registering apiaries. The system is also supplied with software to enable users to download to computer files.

What advantages does this GPS have for beekeepers? As the industry progresses with export requirements and the need to accurately locate sites of bees for disease control purposes (ie, the AFB PMS), the GPS unit will give beekeepers the ability to get instant grid reference readouts on site and store them for future use (up to 250 readings). The beekeeper will also be able to give the reference a unique name (apiary name), and then take the information back to base for down-loading or recording.

The GPS could also be used to assist staff to locate sites. Grid references can be loaded into the receiver at base and then used to navigate to the site, with an accuracy of better than 5 metres! The GPS displays the distance to sites, direction to travel, and speed and estimated time of arrival. Needless to say, the GPS will also be a godsend for anyone who goes out tramping in the bush.

Enquiries for the Trimble Scoutmaster GPS can be made to the New Zealand agent, Geo Systems, PO Box 8160, Christchurch, ph. (03) 343-2333, fax (03) 343-2444.

- Dave Grueber, Apiculture Officer, BLENHEIM

Printer and Fax Cartridge Refills - Laser or bubble jet printers and fax machines are the greatest things since sliced bread, until you have to buy another cartridge. That's when you find out how expensive new cartridges are. And have you ever tried to fill your own with the off-the-shelf "do it yourself" packs? I have, and I usually end up with more ink on the table than in the cartridge.

So, in frustration I called Cartridges Refills of Waikanae one day and who should be on the other end but Dr Murray Hopping, who many of you may recall was one of the early researchers on artificial pollination of kiwifruit.

Murray is now a consultant to forestry groups, but also has a home business called Cartridge Refills Limited. He and his wife offer a top flight service with 2 day turn around, prices that include GST, return courier charges, addressed courier pack for your next refill (you pay postage though), an 0800 number, bankcard payment and a printed test report on your cartridge.

They seem to service every printer I've ever heard of and they also do colour. Their prices range between $20 for a Canon BJC-800, $27 for a HP Deskjet Portable HP51633A, and $37.50 for a HP 500 series HP51626A. Colour refills are around $30-$39.

They have also recently produced a neat "do-it-yourself" kit for around $52 that includes rubber gloves, a decent syringe, ink, a holder for the cartridge while you fill it (a 500 g honey pot!), a special nozzle, cleaner fluid and idiot-proof instructions. The kit looks like it will do 6-8 refills.

Contact Cartridge Refills Limited, P O Box 391, WAIKANAE, phone 0800 241 212, fax 04 293 2750.

- Murray Reid, AAO, HAMILTON

Community Directory - You're probably wondering what something called a " community directory" is doing in a column called Gadgets and Gismos? Well, if you've ever had to write to a member of Parliament, or tried to figure out how to copyright a honey label, or wanted to make a complaint to local government about back-country roading, then this book is for you.

The Harding/McPhail Community Help Directory of Services is a companion to the company's popular Contacts in Agriculture. It's designed specifically for rural people, but goes beyond their previous efforts. Not only does the directory list all the up-to-date contact addresses, phone and fax numbers for services affecting people working in agriculture, it also has excellent "thumb-nail" descriptions of what all the various farming groups, government departments and local services do. The book costs $49.95, and is available from Harding/McPhail, PO Box 2091, PALMERSTON NORTH, Ph. 06-357-1644, Fax 06-357-1648

Guide to Pollination - The Canadian Association of Professional Apiculturalists, the group which published the very popular buff-coloured Honey Bee Diseases and Pests, has just come out with a booklet on crop pollination. The booklet has some excellent colour pictures, and covers everything from basic pollination biology to pesticide hazards to bees.

As you would imagine, the booklet is designed for North American conditions, so there is a lot of concentration on pip and stone fruit, and also tables on the value of pollination to Canada. It's still a very worthwhile book, however, and beekeepers here who pollinate apples may find the section on pollen inserts (which are used extensively in North America) quite interesting.

Copies of this booklet can be obtained from Cliff Van Eaton at MAF Quality Management, Private Bag, TAURANGA for the nominal fee of $5 (incl. postage and handling). For those who are waiting for a kiwifruit pollination handbook, we understand that Dr. Mark Goodwin has been hard at work putting one together. We'll have to wait a while longer before it's published, though. We'll let you know when it comes out.

NEW PUKEKOHE AAO

MAF Qual's Apiculture team is currently reeling under the weight of keen young men. Following the appointment of Robert Rice (Lincoln) and James Driscoll (Palmerston Nth.), a new Apicultural Advisory Officer has just been stationed in Pukekohe. Here's his first report:

"My name is Paul Bolger, a surname normally associated with an entirely different kind of Beehive. I gained a Horticulture Science degree in 1988, and spent the next four years seeking "instant wealth" as a kiwifruit grower. During this period, I caught the "bee bug" while moonlighting as a pollination hive shifter in the Bay of Plenty.

Noticing I was becoming poorer instead of richer, I quit the kiwifruit job and spent 1993 as a cabbage-growing forklift driver in Tahiti.

Back in New Zealand, I decided to try and make a career out of beekeeping. To that end, I worked the summers of 1993 and 94 for a commercial beekeeper in the South Island.

During the off-seasons, I visited the United States for further experience. Most recently I spent six months in southern Georgia, learning how to raise 40,

000 queen per year and listen to country music at the same time!

Taking over an office which hasn't had a resident AAO for eight years will be something of a challenge. My district stretches north from the Waikato River to Wellsford, also including Piako and Paeroa. Derek Bettesworth (AAO, Whangarei) retains responsibility for Northland.

I've just spent two very full weeks helping Cliff Van Eaton with pollination hive audits in Tauranga. Back in Pukekohe, my first priority will be AFB inspections. There appear to be one or two niggling problems in the district I am keen to clear up.

I have already met a fair number of local beekeepers, and look forward to saying hello to the rest of you as time goes on. The Pukekohe office is located at 217 King Street. My office phone number is 09-238-5255, and the fax is 09-238-3757."

BEE NEWS AROUND THE WORLD

Canada to Host Apimondia - The General Assembly of Apimondia has approved Vancouver, British Columbia as the host for the 36th World Beekeeping Congress, to be held September 14-18, 1999.

Don Dixon, Chairman of the Canadian organising committee, says that the Canadians have been working on the offer to host the congress since 1990. The committee was formed on behalf of the Canadian Honey Council (made up of provinical beekeeping associations) and the Canadian Association of Professional Apiculturalists.

Don says the committee will plan the congress to be informative to all beekeepers, regardless of whatever number of beehives they have. Chairman of the Scientific Programme committee is Dr. Mark Winston from Simon Fraser University, who was a guest at the NBA's 1994 Conference in Tauranga.

Aussie Beekeepers Protest Lands Closure - In late September, New South Wales beekeepers took part in a 1500-strong demonstration on the streets outside Parliament House in Sydney, protesting the closure of public lands to a variety of uses, including beekeeping.

According to the October issue of The Australasian Beekeeper, the closure recommended by the Lands and Conservation Minister goes against the best advice from scientists who have studied the effects of bees on Australian native forests. For some time environmentalists have been claiming that Australian honey bees rob the nectar from a variety of native species which some Australian mammals and birds rely on as a food resource.

NSW Apiarists' Association president Keith McIlvride addressed the protest, telling the crowd that the NSW agricultural economy depended on honey bee pollination. And beekeepers, he said, depended on access to public lands to produce the honey they sold to make a living.

BEEFAX

Vol 1, No 4

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HONEY, HONEY, HONEY

With honey production in full-swing around the country, we thought we'd include several articles in this issue related to honey and honey production. First up there's a quick run-down on honey crop prospects around the country, followed by a review of current information related to the world honey market. Elsewhere in the issue there's also an article on tuning up your refractometer. Here's hoping you can put this nifty little instrument to work on this year's good crop.

PROSPECTS AROUND THE COUNTRY

Judging by the change-around in weather conditions being experienced in many parts of New Zealand, it looks as though El Nino has decided to take a holiday somewhere else in the Pacific this year. The result seems to be good honey flows in a few areas, wash-outs (literally) in one or two places, and a "wait-and-see" situation in large sections of the country.

Rainy weather appears to be the spoiler in several of the good manuka producing regions, including Northland, the Coromandel peninsula and the East Cape. Manuka is therefore likely to be in short supply this season.

The weather was very good in the Bay of Plenty before and during kiwifruit pollination, and some areas produced moderate rewarewa flows. However, after pollination the tawari flow was disappointing.

One of the best honey flows in the country seems to be occurring in the Waikato and King Country areas. The crop may be patchy in places, but there's plenty of clover and thistle about, so it could be a two box year. Hives which were used in pollination have not faired quite as well.

Patchy is also the word to describe many areas in the southern North Island, although we understand that Nodding Thistle is making a welcome return to the Hawkes Bay.

In the South Island it seems to have been either too dry (North Canterbury) or too wet (just about everywhere else). Central Otago is reported to be so green you could almost bring in the dairy herds, and in Southland and South Otago the honey seems to be dribbling in between the showers.

With so much pasture growth around the country, its possible that we could experience one of those rare events in New Zealand - a February honey flow. However, if the weather turns colder next month, the total crop for the year will likely be no better than average.

WORLD PRICES RISE

If you've had anything to do with overseas honey buyers recently, you'll know that things are heating up on the world honey market. There seems to be strong demand in many quarters, and prices are moving up. The question is why?

There's no doubt that the recent decision by the US to put a duty (and then a quota) on Chinese honey imports has had some effect, especially in Canada. This year's Canadian crop was down by 5%, but when Chinese honey was shut out of the US market prior to the settling of the anti-dumping case (see BeeFax, October 1995), Canadian honey immediately began making its way across the border to fill the gap. Reports say the entire Canadian crop (30,000 tonnes) has sold out, at prices in some cases nearly double what producers received in 1994.

The other factor affecting world prices, however, is the fact that honey production in the main world supplier countries was down 7% compared to 1994. Argentina, which is the world's third largest honey producer, experienced the biggest drop (14%), brought on by poor weather conditions and a continuing serious problem with AFB. Mexico experienced a drought in the Yucatan, and its production dropped by 8%. Russia, once a leading world exporter, is now a net importer, thanks to strong demand for honey on the domestic market and the disappearance of government-run collectives and export bureaus.

China's production was also down by 7% this year, as a result of droughts in some areas of the country, and floods in others. The anti-dumping case against Chinese exporters shouldn't really affect world trade in honey that much, however, since China will still be able to export 20,000 of its previously annual 28,000t of honey to the US, at a substantial increase in price. The anti-dumping settlement set an import price for Chinese honey of 92% of the value of all honeys imported in the US. As a result, Chinese exporters are expecting to see a jump from NZ$1060 to NZ$1820/t in the price they now receive for honey from the US market.

The Chinese government has also recently put honey on the list of exports which must be tendered. The tender system will control the amount of honey China exports, and the price they receive from all markets. Chinese honey exports decreased 12% in 1995.

Current prices quoted in the December 1995 report of the International Honey Exporters' Organisation are as follows:
US - NZ$2166-$2537/t;
Canada - NZ$2765-$2916/t;
Mexico - NZ$1600-2424/t;
Australia - NZ$2196-2500/t. ("beekeepers have never had such good prices")

WHERE HAVE ALL THE BEES GONE?

Where have all the honey bees gone? When did you last see a wild colony? Are all the feral honey bee populations going to disappear?

These are just some of the comments heard from the US during a recent discussion on the BEE-L Internet discussion group. The varroa and tracheal mites are having a devastating effect in North America, not only on commercial beekeeping, but also on the feral honey bee population. And the situation is still deteriorating. Both bee populations have decreased markedly, and it does not look as though losses have bottomed out yet, especially in the wild. The result could mean a dramatic reduction in crop pollination, and could also affect native plants and the wildlife (such as birds) that depend on them for

food. Andy Webb, a commercial beekeeper who runs Calvert Apiaries in California, says that even with chemical treatments he has lost about half of his hives in the past five years. Webb supplies bees to beekeepers around the country, and has seen a big change in his customer base change. Many hobbyist beekeepers are dropping out because the cost and work involved in maintaining a hive has become too great. According to Webb, bees used to be self-sustaining; you just put them in the hive. Now it takes a great deal of management because of the mites.

Chemical treatments control the mites, but do not eradicate them from the colony. It is not possible to kill every mite in the hive without harming the bees. There is also a strong likelihood that the mites will become resistant to the chemical treatments. Recent reports from Italy suggest that varroa mites there have now become resistant to fluvalinate, the active ingredient in the widely-used Apistan strips. Just exactly how much the feral bee population has declined is uncertain. Reliable data on how many feral colonies there were in any given area before the arrival of the mites is hard to come by, but there is no doubt that most feral colonies have now disappeared in many areas of the United States. One researcher in California who had identified 1800 feral colonies for a research project at just about the time varroa arrived in that state, found that within two years he had to abandon his study because virtually none of the feral colonies remained alive. Some informal bee counts carried out this spring suggest that there are virtually no feral bees in many parts of the States - maybe one bee in a thousand blooms, and this at a time when bees would normally be expected to be buzzing all over the flowers.

On the BEE-L network, "where have all the bees gone?" messages are coming in from all regions of the United States. Suddenly growers and backyard gardeners are realising that they no longer have honey bees pollinating their fruit. So the decline in bees will affect more than the price of honey. Bees are vital to the pollination of fruit and nut trees, melons and many other crops. As the feral bees disappear, beekeepers will find an increasing source of income in making their bees available for pollination, which is already a widespread practice and due only to expand. Everybody has been used to "free bees", but they just aren't there any more.

Interestingly, it appears that new beekeepers are in many cases proving to be more successful in coping with the mites than some veterans, because the new beekeepers are learning the new set of beekeeping skills necessary to control the mites, and they don't have any old practices to unlearn. Commercial beekeepers in the U.S. are suffering large overwintering losses (eg, 25% in the Pacific Northwest for the second year in a row). However, most commercial beekeepers appear to be willing to make more splits to overcome those losses, inspired by a rise in the domestic price of honey.

- David McMillan, AAO, INVERMAY

GIVE YOUR REFRACTOMETER A CHECK-UP

This season a fair amount of honey will be passing through the extractors of New Zealand honey houses. And with the greater emphasis on quality control and product specifications, achieving a premium price for your crop will depend on knowing exactly what you have in your tank.

One of the tools that often comes in handy in this regard is the refractometer. As most beekeepers know, the refractometer is a precision instrument used to measure the moisture content of the honey. And moisture content can be an important factor in honey quality. Honey below 17.6% moisture seldom, if ever,

ferments. But because all honey contains cells of certain types of sugar-tolerant yeasts, moisture levels above 17.6% can result in honey spoilage.

The problem with refractometers, however, is that they are very sensitive devices, and if they are knocked around or jarred, they may give false readings. In some instances, these readings may be out by as much as 2 full percentage points!

It's therefore quite important for beekeepers to calibrate their refractometers on a regular basis and store them in a secure place, away from the rough and tumble of the normal extraction routine.

To calibrate your refractometer, you'll need the small bottle of chemical (monobromo-naphthalene) and the glass test piece supplied in the refractometer kit. The test piece will be inscribed with either "19.2%" or "1.5095". If you have a 19.2% test piece, you'll want to calibrate to a line crossing 19.2 on the refractometer scale. If you have the 1.5095 one, set it to the calibration line which appears just under scale and just above the 25°C mark.

Begin by opening the device and placing a small drop of the chemical on the flat prism of the refractometer. Then place the test piece on the drop of chemical. Site through the eyepiece and adjust the silver-coloured ring until you get a well-defined border between light and dark corresponding to the appropriate spot (either at 19.2% or the calibration line). If the line does not pass through the point indicated, you will need to turn the adjusting screw (just above the eyepiece) with the little screwdriver that comes in the kit.

When you make the adjustment, you will also need to take into consideration the temperature measurement which appears on the thermometer located on the side of the refractometer. If you have a 19.2% test piece, adjust the line the corresponding amount above or below 19.2%, according to the + or - reading which appears on the thermometer. If you have a 1.5095 test piece, make sure to set the calibration only at a room temperature which corresponds to "0" on the thermometer.

It is also important to clean your refractometer properly, especially if you are going to take several readings in succession. Once you have analyzed a honey sample, wipe the main prism with a soft, wet towel to remove the honey. It is then very important to dry the prism completely, because if any excess moisture remains on the lens, the refractometer will give a false (high) reading. Soft, absorbent paper such as toilet tissue is best for this job.

-Cliff Van Eaton, AAO, TAURANGA

SEMEN TO THE SOLOMONS

In early December, a most unlikely export left New Zealand, bound for a tropical island country in the middle of the Pacific. The export was drone honey bee semen, and the consignment was destined for selected virgin queens being kept at a government quarantine station at Tenavatu, on the island of Guadalcanal in the Solomon Islands.

The Solomon Islands is one of the newest beekeeping nations in the Pacific, with a rapidly expanding beekeeper base and excellent opportunities for growth. However, a New Zealand team which surveyed the industry in 1993 at the request of the Solomon Islands government identified a lack of genetic diversity in existing bee stocks as a major constraint to increased production.

The New Zealand semen, which hopefully will broaden the Solomon Islands' bee base, was prepared by David Yanke, a queen producer from Peria, near Kaitaia in Northland, from selected lines of his own personal stock of Italian honey bees. David collected the semen from hundreds of drones and homogenised and stored it in specially modified capillary tubes. He then accompanied the tubes on the five hour plane ride to Honoria. David was assisted by Murray Reid from MAF Quality Management in Hamilton, who is the Management Services Agent for a Solomon Islands beekeeping development project with the NZ Ministry of Foreign Affairs and Trade.

David Yanke was also contracted to artificially inseminate the Solomon Islands virgin queens while on Guadalcanal, using a low power microscope and an insemination apparatus imported from Germany. This is the third year in a row that David has carried out these insemination in the Solomons.

The semen required special certification to be allowed into the Solomons, since the introduced honey bees now present in that country are some of the most disease-free stocks found anywhere in the world. The semen was sampled for known honey bee pathogens prior to its shipment to Honiara.

The Solomon Islands quarantine station is under the supervision of Rex Ramoiau, Chief Bee Officer with the Solomon Islands Ministry of Agriculture and Livestock. Mr. Ramoiau and his staff reared the virgin queens destined to receive the New Zealand semen and housed them in specially constructed mating nuclei fitted with excluders to ensure that the virgins would be unable to leave their colonies and mate.

The inseminated queens will be held under strict quarantine at the Tenavatu station until February, when they will be inspected for bee diseases by NZ apiculturalists. Provided the queens pass their health check, they will be used as breeders for the production of new bee stocks which will be distributed to beekeepers throughout the Solomons.

- Cliff Van Eaton, AAO, TAURANGA

CAN YOU BEAT AFB?

Ask Bill McKnight, a beekeeper from the small Otago town of Lawrence, this question and the answer would be a definite "yes".

Several years ago Bill brought some beehives. At the same time he also brought himself an AFB disease problem. At that stage Bill said he learned how to identify disease, burn beehives, and lay awake worrying at night. But soon thereafter Bill also discovered what else was needed to eliminate the problem. Bill decided to discuss the situation with his local Apicultural Advisory Officer. As a result of those discussions, he decided to put in place an eradication programme which consists of three main elements.

The first element is hygiene, in and between the apiaries. Bill believes that 90% of the disease is spread by the beekeeper, so after finding a diseased hive, and whenever he finishes work in an apiary, Bill washes his gloves and smoker with detergent and water, and scorches his hive tool with a propane burner.

The second element is record keeping. Bill keeps a diary for every apiary and records what happens to the hives at each visit.

The third element is what Bill calls the "Elimination System". According to Bill the ultimate would be to put all your honey supers back on the same hives

they were taken from the previous season. However, for most larger beekeepers this isn't practical, so Bill has developed a grading scheme for his apiaries instead. This scheme has four grades:

Grade 0 - apiaries with no disease for at least three seasons (or never had AFB)

Grade 1 - apiaries free of disease for two seasons

Grade 2 - apiaries with disease spasmodically from season to season

Grade 3 - apiaries that have disease every season

The first year, Bill had Invermay Animal Health Laboratory test composite bee samples from each apiary for Bacillus larvae. The results of those tests helped Bill to code his apiaries into each grade. Results that came back with 0 colonies per plate were put into Grade 0. Apiaries with 1 to 10 colonies per plate were put into Grade 1; 10 to 30 colonies per plate into Grade 2; and above 30 colonies per plate into Grade 3.

Bill's Elimination System

1. Grade 3 apiaries get an extra inspection and feeding visit each season, in August, before the bees get too active.

2. All honey supers, feed honey, brood boxes, etc., that are taken away from an apiary are marked with that apiary's identification number before leaving the site. An indelible felt pen is used, since this mark stays on the boxes through the storage time, but fades off in the sunlight when the boxes are back on the hives. This stops the boxes from getting covered in writing. When any of this equipment goes back out, it doesn't necessarily go out on the same apiary, but it does go to an apiary with the same grade.

3. Nucs are always made up from Grade 0 and 1 sites first.

4. When visiting four or five sites in a day, whenever practical the best graded site is worked first, moving towards the worst.

5. Apiaries are promoted up the grade scale at the end of each season, based on records kept in the diary. Very rarely have sites been demoted.

6. Gear can be moved from a grade 0 to a grade 1 site, etc., but never back the other way.

Results

Before looking at the results, its important to point out that during the time this system has been used, Bill has also increased his hive holdings considerably, a situation which traditionally results in increased disease levels, at least in outfits with an underlying disease problem. Despite this, by using the above described system, Bill has dramatically reduced his disease levels.

When Bill started his programme he had an 8% AFB disease infection level. After one year, the figure had dropped to 7%. Bill was having doubts at this stage as to whether his system was having any effect. However, the next year the figure dropped to 5%, and there was a pattern emerging. Instead of disease popping up here, there and everywhere, the disease was beginning to be confined to certain apiaries. And now, after three years, the disease level is down to 3.5%, with AFB even more confined to certain apiaries.

Bill is currently in the fourth year of this programme. Although Bill only has disease figures for the first half of this year, things are looking very encouraging, with a predicted disease leave of around 2%.

Bill McKnight's story is proof that American foulbrood disease can be controlled and reduced, even in a locality which has always been thought to be one of those places "where you can't keep clean bees". It will probably take another few years before Bill can completely eradicate disease from his outfit, but Bill thinks the effort will be worth it.

The beauty of Bill's system is that it can be easily incorporated into existing management practices. The small amount of inconvenience it may cause is far out-weighed by the results. After hearing about Bill's system, other beekeepers in the Otago region who have low levels of disease in their outfits are also implementing the system, since they believe it will eliminate the disease from there operations.

[Our special thanks to Bill McKnight for sharing his AFB control story with us. We wish him every success in the future.]

- David McMillan, AAO, INVERMAY

GADGETS AND GIZMOS

CD-50

CD-50 is a relatively new water-repellent wood preservative from Churton Distributors. Bee boxes are expensive and deserve to be well preserved. What is so neat about this product is that it colours and treats the timber in one go... ...great for beekeepers who don't have access to paraffin waxers or can't be bothered with priming, under-coating and top-coating boxes with regular paints.

The distributors claim that while CD-50 is non-hazardous and low in toxicity, it will still protect timber against mould and decay-causing fungi. It comes in a range of colours and gives a reasonable coverage (eg, new, dressed timber - 15m2 per litre; new, rough-sawn timber - 9m2 per litre; old, restored timber - 7m2 per litre).

The product must penetrate into the wood to work properly, so it is best used on new timber or timber that has been restored.

CD-50 should be available from your local hardware store, or by contacting Churton Distributors Ltd., 36 Enterprise St., Birkenhead, Auckland, ph/fax 09 418-1876.

Finitron

According to Landcare Research, Finitron wasp bait has been given "the thumbs up" by a majority of users who answered last year's questionnaire about its application and effectiveness. The product has been developed by Eric Spurr of Landcare as a replacement for 1080 wasp baits, which although effective, were also attractive to non-target species such as wekas and kiwis.

Interestingly, although a non-toxic pre-feed is recommended when using Finitron, users who chose not to pre-feed wasps before using the product still found the poison bait attracted similar numbers of wasps compared to those who used a pre-

feed.

Wasp numbers were reduced by an average of 76% within two days of poisoning. This is less than the 90% rate achieved in earlier research trials, but Landcare believes the difference may lie in the fact that not all users last year closely followed the instructions included with the bait.

The other factor affecting the success rate was the amount used. Some users may not be using enough bait, and replenishing the supplies. Cost seems to be the main factor here, but Landcare suggests that it is very important to continue baiting with Finitron for as long as wasps continue to collect the material.

Finitron will be available once again this year under an Experimental Use Permit. Check with your local FruitFed distributor, or contact Landcare in Christchurch (phone 03-351-7099, fax 03-351-7091).

Pesticides In and Out

If you keep bees in mixed horticultural areas in the northern parts of the North Island, you'll know that the use of insecticides on avocados can be a real problem. Avocados are a good source of both nectar and pollen, and beekeepers sometimes also manage to collect a pollination fee, but the fact that the crop blooms for such a long period of time means that growers will invariably apply an insecticide while the trees are still in flower.

Good news is on the horizon, however. Mavarik, the trade name for the chemical fluvalinate, will soon be registered for use on avocados. And fluvalinate, of course, is the same chemical which is used by beekeepers overseas to control varroa mites. As a result, Mavarik is called the "bee friendly" insecticide, and its use as a pre-blossom insecticide on kiwifruit has already reduced bee kills associated with that crop.

And while on the subject of kiwifruit, we also understand that Benlate is likely to be removed from the list of fungicides approved for use on kiwifruit in the near future because the chemical has been linked to the development of resistant strains of botrytis. That's good news for kiwifruit pollination beekeepers, who in the last few years had reported moderate to heavy bee losses in orchards where the chemical was applied in the daytime during the pollination period. As a fungicide, Benlate would have been expected to be harmless to bees.

Fast Bee Sample Collecting

Peter Townsend, a beekeeper from Te Puke, has found a quick and easy way to collect bee samples for export certification. He reversed the motor on his bee blower and created an inlet and outlet tube running through a collection bottle. The blower pulls air through the bottle and the blower nozzle sucks up the bees!

Free Internet Service

New Zealand exporters are now able to maintain World Wide Web pages on the Internet without having to pay for charges for customer access (ie, when someone reads your page - called a "hit").

Internet service provider Voyager NZ Ltd. has established its own digital data

network operating throughout New Zealand and offers free access to users anywhere in New Zealand. Voyager has also established its own direct international link to the Internet which means that it can offer New Zealand companies web sites without paying for "hits".

Until now New Zealand companies wishing to advertise their products on the Web have had to pay each time someone "visited" their Web page. Voyager NZ can be contacted by phone at 09-444-4587.

By the way, at least one enterprising New Zealand beekeeper has already taken the plunge. He's advertising his specialty packs of manuka honey, and telling the world all about the medicinal properties of this unique New Zealand product.

HONEY BEER A HIT

One of the latest honey products to hit the big time on the west coast of North America is (believe it or not) - "honey beer". In the late 80's in the US, micro-breweries started up in competition with the corporate beer giants. Anyone who has tasted a nondescript U.S. beer will understand why these micro-breweries began to flourish. They produced beer that actually had some taste, and soon these "micros" were dusting off all sorts of old beer recipes, looking for even more tasty beers to out-do the competition.

In 1989, a micro-brewery in Oregon began experimenting with the use honey in the making of its beer. The beer that was developed was light, dry, crisp and refreshing (and not very sweet at all). The beer has proven to be a big hit. So big, in fact, that Oregon Honey Beer is now the company's biggest seller. The company has continued to expand, and now produces about 70,000 barrels of beer per year. Each batch of Oregon Honey Beer uses about 400kg of honey, with white clover being the predominant floral source. The recipe uses a blend of 20 percent honey and 80 percent malt for best flavour and body.

Oregon Honey Beer was the first commercial honey beer, but now a number of other U.S. micro-breweries have followed suit, producing beers with names like " Honey Stout", "Honey Porter" and "Honey Wheat Beer". With honey beer taking off in North America, isn't it about time a great beer drinking country like New Zealand also had a go!

Source: Bee Culture, August 1995 (and the editor's own taste tests!)

Royal Jelly AND Asthma Attacks

Asthama suffers in New Zealand and Australia are being warned not to use royal jelly, following the deaths of several people in Australia who took the bee product for their asthma.

However, in the latest case heath officials would not comment on whether royal jelly was in fact responsible for the death. Previously royal jelly had been implicated in severe allergic reactions in at least 11 Australians in the past two years.

The blanket warning against royal jelly has been made because allergists say they are unable to predict which asthma suffers will have a life-threatening reaction to the material. They believe, however, that the proteins and pollens in the jelly may both contribute to potentially fatal allergic reactions in people with asthma or allergies. When someone has asthma, part of the allergic

reaction can be a severe asthma attack which can be very difficult to reverse.

A Melbourne allergy consultant, Dr. John Weiner, said it was unfortunate that no legislation existed which would guarantee what a substance like royal jelly contained. "Just because it's natural doesn't mean it's safe", he said.

Source: NZ Press Association , January 4, 1996

BEEFAX

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MANUKA, OR NOT MANUKA

Now that manuka honey has emerged from obscurity and taken its place as a premium honey with unique antibacterial properties, questions are beginning to be asked about just what constitutes a unifloral manuka pack. And as it turns out, the questions aren't just confined to New Zealand. As a result of all the overseas publicity about the product, government authorities in at least one European country are now investigating whether New Zealand honey exported as " manuka" is in fact true to type.

At the outset we need to make it clear that the New Zealand Food Regulations 1984 do not include any specific references to honey floral sources. There is a general section in those regulations relating to misleading statements in all food labelling, but under that section it would be up to a judge to decide whether calling a honey "manuka" is false or misleading. Without any recognised NZ standards for identifying honey floral sources, it is likely that any such case would be thrown out of court.

In the past few years a number of persons have contacted me regarding honey that they believe is falsely being sold as "manuka" (usually at a premium price) . In their opinion the honey doesn't have the right colour, smell or taste to be manuka. There are also a lessor number of cases where someone has complained that a honey labelled as manuka doesn't even display the gel-like property (the technical term is thixotropy) which is unique to manuka, kanuka and heather (Calluna) honeys.

But just what is manuka honey, and how would we go about determining an objective standard? Unfortunately, the answer is anything but straightforward. Probably the simplest means of judging honey is by analysing its colour. The Pfund grader gives a quantitative measure of this colour by comparing the honey against a standard amber glass wedge (the further along the wedge, the darker the colour). The colour is expressed in millimetre distance along the amber wedge. There are also terms (such as water white, extra white, white, etc.) corresponding to various millimetre ranges.

But while colour grading provides a recognisable standard for international trade and industrial honey uses, it has long been known that honey from a specific floral source can vary considerably in colour, depending on plant varieties, soil type, and even climatic conditions. Manuka is a good case in point. As Bob Walsh explained in his Nectar and Pollen Sources of New Zealand (a pamphlet which is still the best work on New Zealand nectar sources), there is a wide range in both colour and flavour in manuka honey, even when it is produced in a specific region such as Auckland-Northland. And beekeepers in the South Island invariably produce a much lighter manuka pack than those in many parts of the North Island. Crane and Walker, in their Directory of Important World Honey Sources, list manuka honey as falling in a wide colour range of between 69mm and 140mm on the Pfund scale.

The problems with trying to associate floral source with honey colour led scientists in the 1930's to develop techniques to identify the species of pollen grains in honey. The assumption that has been made ever since is that the floral source of the honey is related to the predominant pollen grains the honey contains.

But as Eva Crane points out in her definitive work Honey: A Comprehensive Survey, the problem in allocating honey source proportions based on pollen grain percentages lies in the fact that the number of pollen grains that get into a volume of honey depends on the abundance of anthers and pollen, and the floral biology of the plant species, rather than the amount of nectar the plant produces. The result can be a unifloral honey with an "abnormally" low level of pollen from the plant source. According to Crane, other factors influencing the pollen grain levels include the water content of the nectar, the distance of the hive from the forage source, and beekeeping practices.

A well-known example of an "under-represented" pollen in honey is thyme, which is produced in Central Otago. Beekeepers in that area will recall the problems exporters had in getting European buyers to accept that the honey was in fact thyme honey, since the pollen counts showed in many cases a far lower percentage of thyme pollen than similar honey produced in the Mediterranean. Dr. Neville Moar, who was for many years the recognised authority on pollen analysis in New Zealand, showed that standard unifloral thyme honey in this country could have as low as 20% thyme pollen.

Moar also looked at manuka honey, and in his 1984 paper in the New Zealand Journal of Agricultural Research (Pollen analysis of New Zealand honey) he declared manuka to be an "over-represented" pollen honey. According to Moar, a honey would need to have at least 70% manuka pollen to be classified as unifloral manuka. Clover honey, on the other hand, would need only 45% clover pollen to be judged unifloral.

Moar's work, however, based the manuka classification on just six samples, which came from Auckland/South Auckland (2), the East Coast (2), and South Taranaki (2). Several important manuka-producing regions of the country are therefore not represented. It is also well-known that wild manuka has several different varieties, and that the varieties are able to hybridise. That's one of the reasons for the variation in flower colour. And it certainly seems odd that a honey which is described as being over-represented in pollen count isn't recognised by beekeepers as being a major pollen producer. It would be fair to say that most beekeepers are in fact unaware of the colour of manuka pollen (described by Walsh as being "muddy white"), since they very seldom see either foraging or returning bees with loads of manuka pollen.

One example of the problems associated with pollen content analysis and manuka honey is the case of a batch of honey labelled as manuka which showed a significant level of non-peroxide antibacterial activity according to tests performed by Dr. Peter Molan and his team at Waikato University. However, when a pollen analysis was done on that honey, manuka pollen was very under-represented (as low as 15% of the total pollen). Because the honey displayed the special antibacterial property found only in manuka, we understand that Dr. Molan believes that at least a significant portion of the honey must have been from that floral source.

The third means of determining if a honey is manuka involves analysing whether the honey is thixotropic. Other than kanuka (which is generally lumped together as a honey with manuka), Calluna is the only other species in New Zealand known to produce honey displaying this gelatin-like characteristic. But because the two plants bloom at totally different times of the year, it

would seem to be fairly easy to isolate out the two honey sources. However, a researcher in England named Pryce-Jones has shown that if the protein which is believed to cause this gel-setting in manuka and Calluna is extracted and added to a non-thixotropic honey such as clover, the clover will also set as a gel. The presence of manuka protein in a mixed floral honey can therefore act to " seed" the honey and render the whole honey thixotropic. There are also reports (substantiated by Walsh), of manuka honey, especially from the South Island, lacking this thixotropic property.

Given that all these problems exist, it would seem that the best option for identifying manuka honey might be to use the honey finger-printing method developed by Alistair Wilkins at the University of Waikato. The finger-printing method uses gas chromatography to identify the types and percentages of chemical constituents present in a honey sample. When the method is used over a number of purported unifloral samples, a pattern develops of similar types and percentages of constituents. This unique pattern (actually a graph, rather than a finger print) can then be used to analyze unknown samples. If the results of the sample match the graph for a floral source (regardless of the pollen content, colour or physical properties), the honey can be said to be true to source.

- Cliff Van Eaton, AAO, TAURANGA

Disease Fax - Antifungal Bacteria

(Subtitle: Just When We Thought All Bacteria In Bees Were Bad...).

Recent work by Nabil Youssef, an entomologist in the United States, has demonstrated the potential antifungal properties of four species of bacteria isolated from bee cadavers. The four species are Bacillus subtilis, B. macerans (a), B. macerans (b), and Pseudomonas cepacia.

Youssef has shown that less vigorous growth of fungi occurs in the presence of these bacteria. Reduction in vigour is associated with damage caused to the fungal hyphae by antifungal substances released by the bacteria (hyphae are the equivalent of plant roots and branches). The degree of damage caused to the hyphae is dependant on which of the 4 species of bacteria (and hence which antifungal substances) are present. Current research efforts are focused on determining the nature of the antifungal substances released by the bacteria.

Future work will involve a study in which both the four bacteria and the fungal spores of chalkbrood (Ascosphaera apis) will be introduced into hives via a food source. It is hoped that if these bacteria reduce the growth of A. apis hyphae, then a biological means of control may be found for chalkbrood disease. And in case you're wondering, the four bacteria themselves are not disease-causing organisms in honey bees. They are secondary bacteria which feed on the remains of dead bees.

Source: Utah Science, 56:2 (Summer 1995)

-Robert Rice, AAO, LINCOLN

Red-Hot Honey Sauce

When a new brand of chilli sauce won the "Gourmet" category at last year's Carter Holt Harvey Food Awards, most of us probably didn't notice. However, if you read the label on a bottle of Waha Wera sauce, you'll find that honey is

among the ingredients.

Waha Wera (Maori for "burning mouth"!) is the brainchild of Barry Sommerville of Kaitaia. His first fiery brew was "Kaitaia Fire", a Tabasco style sauce that now sells 25 30,000 bottles annually.

"Feedback suggested there was a demand for a hotter sauce. I also wanted to make a sweet sauce, and to target the large North American market," says Barry. His new award winner features a blend of kiwifruit, honey and Habanero chillies, believed to be the hottest chilli peppers in the world. Kiwifruit was included in the new recipe because of it's strong identification with New Zealand. And, according to Barry, manuka honey was added because "as well as giving us the extra sweetness, manuka honey has a reputation for healing properties, another plus for marketing".

It's a measure of the successful marketing of manuka honey by the beekeeping industry that other food industries are now taking advantage of its high profile. The challenge for all of us in the future is to extend this image to other varieties of New Zealand honey as well.

Source: NZ Kiwifruit, December 1995

- Paul Bolger, AAO, PUKEKOHE

Undoing The Biological Zipper

No doubt you've seen a lot in the press and on television recently about DNA " finger printing". The technique is an important new tool in crime detection work, especially in some of the more difficult rape and murder cases.

However, while this new scientific application is proving its worth in police investigation, in the very near future the same technology is also going to have a significant impact on the way we do bee disease diagnosis in New Zealand. In an effort to stay at the forefront of applied diagnostic science, MAF Qual is investing in this new technology for exotic disease surveillance.

MAF is currently developing PCR diagnostics for European foulbrood, in partnership with Dr. Brian Dancer of the University of Wales. PCR stands for " polymerase chain reaction", and the technique is so powerful that it can detect the presence of bacteria on a flower recently visited by an infected bee. The purpose of this article is to provide beekeepers with an insight into how PCR works and how it can be used in bee disease diagnosis.

Firstly, the basics. What is DNA? DNA is "deoxyribonucleic acid", or in simple terms "nature's blueprint". DNA provides the plan by which all life is constructed. As builders use blueprints to build houses, so all living things follow a DNA blueprint to assemble the building blocks that make up living cells.

The structure of DNA is like the zip in your coat. Your zip is composed of two perfectly matching equal parts which link together when you do up the zipper. DNA is like the zip when the coat is done up, made of two perfectly matching linked halves. The two matching halves are called DNA strands.

The metal zipper that fastens together the two halves of the zip in your coat is the equivalent of the enzyme that zippers the DNA strands together. The enzyme is called "DNA polymerase". And the individual "links" of the zip are like the individual molecules that make up DNA, which are called "nucleotides".

The nucleotides (links) come in four types, and occur repeatedly along the DNA strand.

The order and number of the nucleotides is the blueprint. One blueprint equals one gene. It is this order and number that determines exactly which building block will be constructed from a gene (blueprint). A piece of DNA containing just 10 nucleotides of all four types has 10,000 ways in which the nucleotides can occur in order and number.

There are many different blueprints for all of the building blocks needed to build cells. The number of genes that occur in different organisms varies from a few in bacteria to tens of thousands in large animals. Humans have about 100, 000 genes.

Each gene may be constructed of from a few thousand to 10,000 individual nucleotides joined together, forming the DNA strands. Whenever the gene (blueprint) is used to make a building component of a cell, a copy of the gene is made and sent off to a cellular factory that assembles the new cell component.

Individual genes, while containing thousands of linked nucleotides, are so small that one copy of a gene can't even been seen with a super microscope. So to study genes we use the PCR technique to make millions of copies of the gene, in much the same way that a builder might make photocopies of his blueprint to give to the plumber or the electrician, etc.

So much for the preliminaries. The important question is what does copying DNA have to do with EFB diagnosis? PCR is a technique that was developed in the last few years and allows for the "artificial" synthesis of DNA. Unlike a photocopier which copies everything, PCR will only copy DNA if the right bit of DNA is there to be copied, with the scientist controlling the whole process. In the case of EFB diagnosis, the copying process will only work if DNA from Melissococcus pluton (the causative organism of EFB) is present in a sample.

PCR works by making many copies of a specific part of a gene in a repetitive process over many cycles. To carry out the copying, the DNA containing the gene of interest is placed inside a plastic tube, together with millions of individual nucleotides (that will be linked together while making the copy of the gene), an enzyme called DNA polymerase (which joins the individual nucleotides together), and something called "the primers".

The primers are really short pieces of the gene containing about 20 to 30 nucleotides which perfectly match the other half of the DNA sequence. This is a bit like when you do up your zip. First you have to insert one half of the zip into the guide on the other half of the zip. The metal zipper (or in PCR terms, the DNA polymerase) guides the two halves of the zip together. However, unlike your coat, which contains two complete halves of the zip which the zipper brings together, in PCR only one half of the zip is complete. The other half is manufactured from the individual nucleotides (links) as the zipper is done up.

So in the PCR reaction, we have the DNA in our sample (a closed zip) which we unzipped by heating the DNA in the PCR mixture to 95oC. We then link the primer of 20 to 30 nucleotides (links) to the unzipped DNA by cooling the DNA mixture to about 55 to 60oC. A new matching half of the DNA sequence is then synthesised by the DNA polymerase at 72oC, a bit like doing up the zipper.

The "doing up the zip function" of the DNA polymerase works by joining the individual nucleotides together, forming a continuous chain of nucleotides

which then mesh to the other half of the DNA strand. Which nucleotide is used in any given place along the new strand of DNA is determined by the nucleotide in the original matching strand of DNA.

Both strands must match perfectly before the two halves of DNA will zip together. So every time you repeat the PCR process (cycle), more new DNA is synthesized. After 40 complete cycles, you will have made about 1,000,000 copies of the piece of DNA of interest. And because the DNA in the sample always consists of two strands, once the strands are unzipped by heating you can make the whole thing go faster by copying both strands at the same time using two primers, one matching each strand.

So how do we use this process to diagnose EFB? If you extract DNA from a dead honey bee larva with an EFB infection, you end up with samples of DNA from both Melissococcus pluton and the larva itself. If the primers you use to start the PCR process only link to M. pluton DNA, then after 30 cycles of PCR you will have produced 1,000,000 copies of the piece of M.pluton DNA, but no copies of the bee DNA because the primers can't link to it.

In the case of a suspect case of EFB, if you don't end up with 1,000,000 copies of M. pluton DNA after the PCR reaction, then you can be sure the sample doesn' t have EFB.

In terms of a diagnostic technique, you can make DNA from lots of bee samples (including adults, larvae or pupa) and test the samples using primers that only work on M. pluton. You can then tell which samples have or don't have EFB by the presence or absence of the 1,000,000 copies. You don't even need a microscope to see that many copies!

How sensitive is this technique? Well, you only need one cell of the M. pluton organism (in theory) in a bee to detect its presence by PCR. With microscopic examination, on the other hand, you need 100,000's of cells of M. pluton per bee before you can reasonably expect to detect its presence. And with plate culturing, the figure is about 8,000 cells of M. pluton per bee.

PCR technology can also be applied to testing for all other pests and diseases of bees and for end-point testing of honey, etc. As well, the technology has important uses in a range of other (non-honey bee) disease surveillance work MAF Quality Management carries out.

Delivery of the PCR technology for EFB is expected in July of this year. Dr. Dancer will also visit New Zealand to train staff at MAF Lynfield in the use of PCR. Lynfield will be the recognsied lab for EFB PCR testing in this country.

The technology is currently being refined by testing it on a number of New Zealand samples. As well, Dr. Dancer would like to test the PCR against Halfmoon Disorder samples. So if anyone comes across a hive with Halfmoon in the next several weeks, by all means contact your local AAO. The AAO will arrange to come out and take a sample for testing.

- Robert Rice, AAO, LINCOLN

GADGETS AND GISMOS

Hydroslide for Bees!

Beekeepers have tried all manner of things for ridding the honey house of bees, including holes in windows, traps, and even nuc boxes, all with varying

degrees of success. However, while visiting a honey shed on the West Coast recently, I was intrigued to see a new device - a water pipe which exited the hot room and disappeared into a drain.

Closer inspection revealed a simple "hydroslide" set-up that evacuated bees from the hot room. The beekeeper remarked that over a day or so it would easily rid the hot room (or any other room for that matter) of any bees bought in from the field with the supers. From then on it also kept the room clear of any flying or robbing bees.

The hydroslide works like this. There is a small window of light (about 300mm square) at the darkest end of the room. Immediately below the window is a small gutter (about 20-30 mm deep and 20mm wide) set at approximately 10 degrees of slope (from left to right) which runs into a piece of 25mm stainless pipe (a piece of 20mm ridged PVC would suffice). This pipe falls away and runs to the outside of the building. Close by is a nuc box to collect the bees.

On the opposite end of the gutter below the window (the uphill end), a small diameter pipe (about 8mm or 3/8 inch for us old guys!) delivers a continuous flow of water. The flow is steady but not "rapid". The water provides the quick means of transportation for the bees to the outside world.

The bees are drawn to the light from the window and eventually slide down the glass surface and fall into the gutter. The flowing water picks the bees up and whisks them across the gutter and down the pipe to the outside world. The whole process is "fully automatic".

Believe it or not, the bees tend to come out of the pipe flying, rather than soggy and crawling. They seem to get caught in the surface tension of the water as it flows through the gutter. The bees also don't seem to have any problem finding their way to the nuc which is about 200mm away from the drain exist. Once the nuc has accumulated enough bees, the beekeeper adds a queen and a frame of brood and makes it into a full-fledged colony.

The "bee hydroslide" could be used almost anywhere in the extracting shed, or other storage sheds for that matter, and can be left going continuously to keep the shed clear of bees. However, it does work better in a "darker" area where a window provides an attracting light source.

A simple drawing of the "bee hydroslide" can be obtained from MAF Qual in Blenheim, or by phoning John Glasson at Blackball on the West Coast (ph. 03 7324856).

- Dave Grueber, AAO, BLENHEIM

CD-50 and Bees

In last month's BeeFax, we mentioned a new water-repellent wood preservative called CD-50. We told you that according to the distributors (Churton Distributors, Inc.), even though CD-50 is non-hazardous and low in toxicity, it will still protect timber against mould and decay-causing fungi.

CD-50 looks like an ideal material to use on beehives - a water-repellent paint and a preservative, all in one application. We were told about the material from a beekeeper who has been using CD-50 to treat all his new woodenware.

However, Frank Walker, an observant reader of BeeFax, went to his local Placemakers and picked up the new CD-50 brochure. The brochure states that "

termites will not survive when in direct contact with CD-50". As you can imagine, that statement set off alarm bells for Mr. Walker. After all, if the stuff is hazardous to termites, you wouldn't think it could be all that good for bees.

It turns out that the active ingredient in CD-50 is copper-8-quinolinolate, sometimes called Anti-Blue. Beekeepers in the Waikato know all about copper-8, since it used to be available from Norm Findlay, a beekeeping equipment manufacturer and distributor. Copper-8 works well as a beehive preservative, and has the added advantages of being water soluble and non-colouring. That's why it was called Anti-Blue (in contrast to Metalex).

I asked Arthur Read, a technical representative at Churton, about the effects of CD-50 on termites. He told me that while the product certainly repelled and even killed termites, the reason is likely to be either due to the antibacterial effects of the product on the bacteria in the guts of the termites, or simply the fact that the termites didn't like the taste. In either case, CD-50 doesn't have the same effects on honey bees, since the active ingredient has been used safely for years on beehives.

According to Mr. Read, the only potential problem with CD-50 in beehives would be a slight possibility of oilish taint transfer within the colony. Unlike Anti-Blue, CD-50 has an oil carrier, and it is this oil which provides the water repellency and timber tensioning (anti-warping) in the product. To reduce this tainting, Mr. Read recommends that CD-50 be used on beehive woodenware without any colour toning added.

Churton's also distribute an equivalent of Anti-Blue, sold under the trade name AP-5. Remember, though, that this product is a water-based formulation of copper-8, and while it has excellent antifungal and antibacterial properties, it won't provide the water-repellency of CD-50. For more information, call Churton's freephone number (0800) 107-555.

No-Honey Queen Cage Candy

The following recipe was used by Pat and Terry Gavin for many years when they were operating Whiteline Queens in Whangarei. Honey-free candy must be used with queen bees exported to Canada. It's also a good idea to use honey-free candy in all queen cages rather than risk the chance of spreading AFB in queen cage candy.

Ingredients	Amount
Granulated Sugar	2.3 kg
Water	1 litre
Tartaric Acid	1 pinch
Piping Sugar *	
Glycerine	

*(Piping sugar is a non-starch icing sugar available from most bakeries and cake shops.)

Bring to a boil the granulated sugar, water and tartaric acid. Simmer very slowly for 30 minutes. Mix this syrup warm with piping sugar (one part syrup

to five parts piping sugar). Add three or four drops of glycerine.

Knead the result with extra piping sugar to achieve soft consistency The final candy should be somewhat softer than equivalent honey candy. Store in airtight plastic bags in refrigerator until needed.

Microwave Handy Hints

If you have a microwave, they can be great things for melting jars of honey, especially if the jars are already labelled. The labels won't come off the way they do when you melt a jar of honey in boiling water.

When you use a microwave, you'll find that bout 1 1/2 to 2 minutes on high is enough to melt the honey thoroughly. Make sure you remove the lid, however, because the honey will froth. If the honey has crystallised solid you may need to stir it part-way through the heating cycle.

While honey melts really well in a microwave, the same can't be said for beeswax. The moisture in the wax boils, expands and blows the wax apart, with the wax sticking rather firmly to the walls of appliance!

- Murray Reid, AAO, HAMILTON

MAF RA SEEKS BEEKEEPING INPUT

The MAF Regulatory Authority is currently establishing four technical subcommittees under the umbrella of the Agricultural Security Consultative Committee. The subcommittees will give industry stakeholders a forum to provide technical advice and engage in consultation with the MAF RA on proposals and policy changes (especially on agriculture security standards). The subcommittees will also provide industries with the ability to consult with the MAF RA on the application to NZ of the GATT agreement and market access.

We understand that beekeeping industry-based organisations have been invited to nominate representatives for the Invertebrate Subcommittee.

Source: Sentinel, February 1996

RETAIL HONEY PRICES SURVEY

Readers have been telling us that they would like to see more market information in BeeFax, similar to the article on the export market in last month's edition. We're happy to oblige, and in this issue we begin an on-going survey of supermarket prices throughout the country. Each month, AAO's in each centre will visit two area supermarkets and record the retail price of a 500g pot for three categories of honey (clover blend, bush blend and manuka). The results will be averaged and presented along with the range (lowest and highest prices). We hope you will find this information useful in your own businesses. Remember, however, that the prices listed are only indicative, and do not necessarily represent the average situation for all retailers in any given area.

What follows are this month's survey figures, as reported on 26 February:

Centre	Clover/Blend Ave/Range	Bush Blend Ave/Range	Manuka Ave/Range

Whangarei	$2.31/$2.01–$2.89	$2.64/$2.05–$3.95	$4.36/$3.21–$7.50
Auckland	$2.34/$1.96–$3.01	$2.26/$2.17–$2.37	$3.94/$3.25–$4.52
Hamilton	$2.42/$2.17–$2.59	$2.75/$2.35–$3.15	$3.95/$3.75–$4.31
Tauranga	$2.62/$1.99–$3.75	$3.00/$2.05–$3.95	$4.37/$3.25–$6.95
Palmerston N.	$2.47/$2.15–$3.61	$2.43/$2.34–$2.61	$5.65/$4.19–$7.95
Blenheim	$2.39/$2.10–$2.70	$2.77/$2.25–$3.70	$4.07/$3.10–$7.75
Christchurch	$2.32/$2.09–$2.86	$3.14/$2.65–$3.70	$6.03/$4.55–$7.75
Dunedin	$2.53/$2.15–$2.95	$2.68/$2.25–$3.25	$4.22/$3.59–$5.09
Average	$2.42 (500g)	$2.70 (500g)	$4.57 (500g)

BEEFAX

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BREEDER QUEEN MANAGEMENT

[Fortunately for BeeFax readers, Norman Rice is currently visiting his son Robert at Lincoln, and in between sightseeing in the South Island, he has found time to write an article for us on his methods of breeder queen management. For those of you who might not know, Rice's Bee Farm was for many years one of the Southern Hemisphere's largest commercial queen producers, so the techniques described below are certainly well-proven. Our thanks to Norman for graciously sharing this valuable information with us.]

Many things need to be organized, with a high degree of skill, in order to produce quality queen bees. However, I believe the most important task is the effective management and care of the breeder queen. If you only want a few queen cells, it may be satisfactory to simply select very small larvae. But in order to have large numbers of well-fed larvae for mass production of queen cells, it is necessary to take the trouble to do the job properly and to have larvae at the right age and well-fed at the time of the transfer (grafting) operation. [Editor's note: Norman uses the term "transfer" throughout this article to describe the process better known to most New Zealand beekeepers as " grafting".]

Organizing your management to ensure that the larvae are of the right age and are well-fed, has lots of benefits. Time is saved in finding suitable larvae that you know will produce the best possible queen. The task of transfer is also much easier and faster. Being able to use most, if not all, of the larvae from the comb and have the prepared cups back in the cell starter colony as quick as possible is an added advantage.

The way we achieved this result in our queen rearing business was by using half-length, full-depth Langstroth frames. These frames provided an area of comb that the queen could usually lay out during a twenty four hour period. A brood box was used that would hold either six full-length frames in the usual manner, or twelve half-length frames fitted across the box. The box had a fixed bottom board and provision was made for two queen excluders which could be slid into saw cuts made vertically into both sides of the box. The first saw cuts were made at a point a little less than three and a half half-frames from one end, with the second cuts made at less than three and a half half-frames from the first one, at a point less than the width of seven half-frames.

When production of transfer larvae was not required, the queen excluders were removed and the queen had the full run of the brood box. If need be, a queen excluder was fitted over this brood box and an extra super was provided. However, it is normally better to restrict the laying of choice breeder queens.

When we wanted to produce transfer larvae, we placed the two excluders in the saw cuts. We then had three compartments, two of these able to hold three half-frames, and one that could hold five half-frames. I always liked to have additional space in each of the sections of the box to avoid rolling the queen

when the frames were being handled. This is the reason why the excluders are spaced at three and a half half-frames apart.

To get the best results from the breeder queen and to keep her providing larvae on a regular basis, it is necessary to have a strong colony of mostly young bees. When the breeder queen is established in the breeder hive, the configuration of frames is as follows: in the rear compartment, place a feeder to the outside and then two frames of sealed brood; in the next compartment, place two frames of mostly sealed or advanced brood, one against each excluder, with an empty and cleaned dark brood comb placed between these frames of brood. Make sure that the queen is in this compartment. In the front compartment, place five combs of brood, honey and pollen. In the normal course of events the queen will lay up the empty comb in the centre of the middle compartment in one twenty four hour period or less.

On day two, one of the five frames in the front compartment is removed, leaving a space next to the queen excluder. The frame of eggs is removed from the middle compartment and is positioned in the vacant space in the first compartment. A second cleaned, dark brood comb is then inserted in the vacant space in the middle compartment for the queen to fill with eggs. On day three, a second of the five frames from the front compartment is removed and the egg frame from day two is placed next to the queen excluder, with a third cleaned empty comb placed in the middle compartment for the queen to fill with eggs. A third frame is removed from the front compartment on day four and the process is repeated.

We now have three frames of eggs in front of the queen excluder with a cleaned brood comb for the queen to lay in the middle compartment. The brood combs in the rear compartment should be inspected for possible rogue queen cells; likewise the two brood combs in the front compartment.

From day five, being the fourth day after the queen laid the first frame of eggs, we can begin production of transfer larvae on a regular, daily basis. Because the colony has had no other young larvae to feed, all of the hatched larvae should be well-fed and of the best age to transfer to the prepared queen cell cups. This abundance of larvae makes the transfer work very easy. It is no problem for a skilled operator to make the transfer at the rate of three hundred cells per hour!

It is a simple operation to adapt this arrangement so that the queen will fill a comb with eggs when the queen producer requires transfer larvae on certain days of the week. This is achieved by inserting the empty comb four days ahead of any day the larvae are required.

Bearing in mind that beekeeping conditions change from day to day, sometimes it is necessary to replace the feeder in the back compartment with either a half-frame of foundation or dry comb so that the bees can draw comb and store honey. If transfer larvae are being produced and used on a daily basis, it is also necessary to provide additional frames of sealed brood in order to keep up the colony population.

When the frames of brood hatch out in the middle compartment, they should be replaced with frames of advanced brood, since the queen will often prefer to lay in one of these newly-hatched combs rather than the clean brood comb you have provided.

Lastly, remember that queen bees are females, and while you can organize them to do what you want a good deal of the time, they will always do what they want to do. In order to be really sure of having sufficient transfer larvae, you

should always have several queens producing larvae.

In my book Queens' Land I have described the type of mating nucleus colony we used in our queen production. The equipment that served us best for mating colonies was also based on the half-length full-depth Langstroth frame, and we used equipment similar to the unit described, although with an additional compartment that gave us four nucleus colonies in one box, separated with metal divisions and inner covers. This equipment was also used for over-wintering colonies and supplying bees and brood to establish mating nucleus colonies in the spring.

- N. V. Rice MBE, Brisbane, Australia

NEW UK CERTIFICATE

After negotiations lasting nearly 12 months, a new agreement has been concluded between the MAF Regulatory Authority (MAF RA) and UK MAFF regarding the certification requirements for export of bees from New Zealand to the United Kingdom.

Briefly, the UK authorities have accepted that we have country freedom from Varroa, Tropilaelaps, Acarine and EFB. They have also dropped the requirement for testing for Nosema and Apimyasis, which should save exporters considerable expense in arranging for tests.

This only leaves AFB as a concern. The new agreement will in future require NZ Export Certifying Officers to obtain beekeeper declarations regarding freedom from AFB for the hives producing the bees (including queens),specifying the date of inspection. The officers can then issue a standard export certificate with an additional declaration. The MAF RA is requiring MAF Quality Management to develop an audit system which will provide confidence in these beekeeper declarations. However, this should rarely involve much expense as it will in most cases be possible to arrange an audit when an inspector is in the district for other purposes.

Hopefully we will be able to make similar progress in some of our other markets over the coming months.

- Ted Robert, AAO, PALMERSTON NORTH

BEEKEEPING BACK-KEEPING

Back injury is a clear and present danger in the beekeeping industry. You can carry out normal beekeeping activities for years and then "twang", something happens and your physical movement is never comfortable again.

Are you doing all you can do to avoid lower back injuries in your beekeeping? Have you thought through your work conditions and eliminated as much back strain as possible?

Ask yourself these questions:

* When seated is my back well-supported?

* Do I stand correctly when I work hives?

* Do I bend my knees when lifting heavy loads like honey supers?

* Do I push heavy loads rather than pull them?

* Do I know about and take proper care in high-risk areas and conditions in my beekeeping?

Does my honey shed have sound, safe handling procedures for materials and machines that protect against back injury?

Experts who have studied back injuries have come up with the following procedure for safe lifting of heavy objects (like full honey supers). First, always get as close as you can to the load. Then whenever possible, bend your knees so that you lift the load with your legs, not your back. One way of making sure this happens is to concentrate on keeping the hollow in your lower back. If you do this, you won't be tempted to use your back like a crane.

Some people have a difficult time bending their knees because of knee injuries or arthritis. If you have this problem, try bending the way professional golfers do. Support your back by taking some of your weight with your free hand. Then swing one leg backwards while bending over, steadying your weight with your other hand.

When you have lifted the load to standing position, always move your body and the load by remaining straight and turning with short steps, rather than just twisting your torso. Beekeepers are especially prone to such twisting, both because of the tight positions they find themselves in when working between closely positioned hives, and because of the fatigue that sets in after bending over hives all day. However, twisting when carrying heavy supers is dangerous for your back, and can lead to a ruptured disc.

Many people also don't realise that pushing is a much safer way of shifting heavy loads than pulling. However, when you do push a load, try to avoid leaning over it. And when you do have to pull a load, remember to bend your knees and take short, steady steps.

The most important exercise in keeping your back flexible and pain-free is to " extend before you bend". You should complete this simple routine every time you lift, repeating it frequently when bending for long periods (eg, when working hives):

* stand upright with your feet slight apart

* keep your knees straight

* place your hands in the small of your back with your fingers pointing backwards

* bend backwards at the waist as far as you can

* hold the position for two to three seconds, then slowly relax

* repeat frequently

The final message is an obvious one, even though most of us are inclined to " tough it out". Remember to listen to your back, and if you have any sudden increase in pain, contact your doctor as soon as you can. Anyone who now suffers chronic back pain will tell you that this is the soundest piece of advice of all.

- James Driscoll, AAO, PALMERSTON NORTH

BOOK REVIEW

The Immigrant Bees 1788 1898...A Cyclopedia on the Introduction of European Honeybees into Australia and New Zealand', by Peter Barrett. Published by the author, 1995.

Peter Barrett, an Australian beekeeper and historian, has produced a compact 200 page paperback-sized book on the history of beekeeping in early Australia and NZ . The book has a particular emphasis on when and how introductions occurred and who brought in the bees. However, it also contains many other gems on early beekeeping, such as conditions faced by the early farmers, beekeeping prices, and drawings of early hives and other pieces of equipment.

One delightful tale in the book recalls the journey of Angus Mackay, who accompanied his hive of Ligurian bees from California to Australia in 1877 on the ship City of New York. The bees really suffered through the tropics, despite being watered through a top screen, so Angus took to sneaking the bees outside in the breeze. However, the other passengers caught on and Angus soon had a visit from the captain who needed assuring that these 'fearsome insects' wouldn't rampage through the ship and hurt the passengers and livestock on board.

Angus convinced the captain that all was well and soon the bees were a great source of interest on the long voyage. So much so, in fact, that the crew added bolts and lines to the rigging so that the bees could be hung out in the breeze like a canary cage. The captain must have really gotten the "bee bug", because he timed the arrival of the ship into Honolulu so that it arrived at daybreak and left after dark. He made the arrangements so that the bees could have a fly and clean out and also stock up on pollen and nectar from close-by Hawaiian flowers.

According to the account, the bees foraged all day with great enthusiasm. Then come nightfall, they all returned to their hive, ready for the next leg to Sydney. (Reading that story, I couldn't help thinking how different the transport rules are today for bees through Honolulu!)

The book also contains a large section devoted specifically to New Zealand, with 2 chapters on the dark honey bee and the Italian bee. Other chapters deal with how bees actually got to New Zealand and Australia, how they spread from the original points of introduction, and how beekeepers in these two countries began to produce and export honey and beeswax.

The author, who printed the book himself, only published 100 copies of the first edition (12 of which came to New Zealand) . The first edition is sold out, but a second printing is proposed. You can enquire or order a copy from the author at 1 Banjo Place, Springwood 2777, New South Wales, Australia. The price for the first run was NZ$38.

[Editor's Note: We understand that a few copies of the first printing are still available from Bruce Stevenson, Kemp Rd, KERIKERI, ph/fax (09) 407 7190.]

- Murray Reid, AAO, HAMILTON

ELISA KIT FOR TRACHEAL MITES

A new Enzyme-linked Immunosorbent Assay (ELISA) kit for tracheal mite detection is currently under evaluation by MAF Quality Management. This kit has been developed by a team of researchers at the Northern Agriculture Research Centre, Beaverlodge, Alberta, Canada.

The kit allows for the rapid detection of Acarapis woodi, a tiny, internal mite which infects the tracheae of honey bees. The tracheal mite is a serious pest of Apis mellifera, and is now found in a number of important beekeeping areas, including North America, South America and Europe.

Unlike the manual method of dissecting individual bees, which is commonly used to diagnose the presence of the mite, the ELISA kit can screen 100 bees at a time. The ELISA kit is therefore both faster and far more cost-effective than the screening method currently used by MAF Qual's bee disease lab at Invermay. The kit is so sensitive that it can detect the presence of tracheal mites in just 6 bees in a sample of 100. So, if the tracheal mite ELISA proves to be as effective as indicated by the Canadians, it will be adopted as an integral part of MAF's exotic bee disease surveillance program.

Now for a bit of the science behind how the kit works.

First, the "scientific jargon":-

Antigen = a foreign substance (usually a protein or carbohydrate) that when entering a body induces an immune response, including the production of specific antibodies

Antibody = a type of protein called an immunoglobulin that reacts with a specific antigen, and serves as part of the body's vital disease-defence mechanism.

Enzyme = a protein molecule that catalyses (modifies) a biochemical reaction by lowering the activation energy required for the reaction to proceed.

Now, what the jargon really means :-

Antigen = bacteria, virus or other material (including splinters, bee stings and venom) that gets into our blood.

Antibody = the "flag waver" in the blood that helps the white blood cells locate the antigen so that the white blood cells know what to attack and "eat".

Enzymes = things that they put in the washing powder to chop up the grease and tomato sauce stains on your shirt from the hamburger and chips you had for lunch today [thanks for that, Robert !!!- Ed.]

Finally, the explanation of how the tracheal mite ELISA actually works:-

The test for mites is carried out in a microtitre plate, which consists of a plastic tray full of little wells, each capable of holding the equivalent of about 10 to 15 drops of water. The bottom of each well is pre-coated by the manufacturer with ground-up tracheal mite (the antigen). The ground-up mite has been dried so that it sticks to the plastic of the plate.

To conduct the test, you first get a sample of 100 bees and grind up their thoraxes in water (the bee's tracheae are located in the thorax). One drop of the bee solution is then placed in each well of the microtitre plate. Next a drop of "anti-immunoglobulin conjugate" (also supplied by the manufacturer) is added to each well. "Anti-immunoglobulin conjugate" is the scientific way of

saying an antibody that has an enzyme attached to it (like the dog chained to the kennel, the dog being the enzyme).

Once the anti-immunoglobulin is placed in the well it has a choice: it can either stick to its specific antigen (ground-up bits of tracheal mites) pre-coated on the bottom of cell of the microtitre plate, or the same antigen in the form of ground-up tracheal mites that were inside the thoraxes of the 100 bees.

After about 12 hours, all the available anti-immunoglobulin has stuck to the antigen, either on the plate or in the drop of ground-up bee thorax mixture. The larger the number of mites in the bees being sampled, the less the amount of anti-immunoglobulin that will stick to the antigen coated on the plate. If no mites are presence in the bee sample, all the anti-immunoglobulin will stick to the plate.

The plates are then washed, removing the bee mixture containing antigen/anti-immunoglobulin complexes that have formed, and leaving antigen/anti-immunoglobulin complexes stuck to the plate .

Remember the enzyme (the dog) attached to the antibody (anti-immunoglobulin)? Well, like the stuff in the washing powder, it chops up things. In this case, a chemical is now added to each well on the plate. This chemical is chopped " in half" by the enzyme attached to the antibody, which in turn has attached itself to the antigen coating the plate. When this chemical is "chopped" in half it changes colour, from no colour to bright yellow.

To determine how many bees in your sample contain tracheal mites, you measure the intensity of the yellow colour using a machine called a microtitre plate reader. Remember, the more intense the yellow colour, the lower the number of mites in the bee sample (that is, less of the anti-immunoglobulin has been removed by the bee solution and more of it has stuck to the antigen coating the plate).

The intensity of the yellow is compared to a standard created by using water, instead of bee mixture, in some of the wells on the microtitre plate. The wells to which only water was added will give the most intense colour (ie, all of the anti-immunoglobulin will have stuck to the antigen coating). A graph is provided which plots the intensity of colour compared to the standard. You can then determine the number of bees infected with mites based on the maximum numbers of mites per bee possible.

Of course in the case of a country like New Zealand, where tracheal mites are not thought to be present, the ELISA test should be very straightforward. The colour of wells for bee samples should always be equal in intensity to the water standard. However, if the intensity is greatly lower, then the sample will need to be re-examined carefully, with individual dissections of tracheae required to look for the presence of the mite.

A confirmed finding of tracheal mites in samples of New Zealand honey bees would lead to an Emergency Disease and Pest Response (EDPR) carried out jointly by MAF Qual and the beekeeping industry. The EDPR would be used to determine the extent of infection in our apiaries and would provide the information needed to decide on appropriate measures for eradication or control of the mites.

- Robert Rice, AAO, LINCOLN

Noisy Propolis Extractor

Many large-scale collectors of propolis are using propolis mats made from shade or wind-break cloth. These mats are not all that efficient, but if you have enough of them then you can certainly collect serious quantities of propolis. The problem, however, is how to separate the propolis from the mats?

The usual method is to freeze the mats, then wriggle and squiggle them by hand to release the propolis before the stuff warms up too much and gets sticky. That's fine in theory, but the novelty wears off when you have hundreds (or even thousands) of mats to do.

A solution adopted by a couple of enterprising Waikato beekeepers is to use the principle of rotary tumbling. In essence, they built heavy-duty tumblers (and I mean heavy-duty), with some pieces of steel inside. They then put a bunch of frozen mats in with the steel pieces and tumble for 10 15 minutes or so (it's best if the tumbler can be kept in a cool room).

Some mats free up their propolis better than others, and the mats take a bit of a pounding from the steel. However, most mats seem able to survive several trips through the tumbler. And if the mats get a bit 'stressed out' then two or even three of them can go on a hive before they are trashed.

And oh yes, there's one last thing - the tumbler makes a noise like you wouldn' t believe, so if you go in for one of these things then either sound-protect it somehow or use it when the neighbours are away!!!

- Murray Reid, AAO, HAMILTON

ORGANIC HONEY DEMAND

Bryan Clements of Waikato Honey Products, KIHIKIHI, has just returned from a trade mission overseas organised by TRADENZ, the commercial arm of the Ministry of Foreign Affairs and Trade. The mission concentrated specifically on organic products, and Bryan and representatives from such leading NZ companies as Watties and the NZ Kiwifruit Marketing Board, attending two organic products trade fairs.

Bryan tells us he was amazed at the range of organic products and the scale of organics marketing in Europe and the US. And he was a bit taken aback by the growing demand for organic honey. According to Bryan, a market exists in Europe for at least 1000 tonnes of organic honey, which would return to the NZ producer about NZ$3.65/kg. And organic food products people told him that the number one organic product they were seeking from New Zealand was honey.

There also seems to be a worldwide shortage of organic honey, according to Bryan. He was interested to see organic breakfast cereals on offer in the States which used honey, but which also had a little footnote on the label to the effect - "due to the worldwide shortage of organic honey, this product has been manufactured with non-organic honey".

While much of what Bryan saw on his trip augers well for honey producers in this country, especially if organic honey certification standards can be further developed in New Zealand, it wasn't all good news. Bryan also heard about a significant new threat in the organic products market - the concept of " distance to market".

In many places in Europe, environmentally conscious consumers are beginning to

question the amount of fossil fuel resources used to ship organic products to market, especially when those products come from as far away as New Zealand. Bryan reckons that "distance to market" may become a significant new trade barrier in the future, replacing the use of dubious agricultural quarantine requirements which are being threatened by the Sanitary and Phytosanitary Agreement of GATT.

MORE ON MANUKA

Last month's article on standards for manuka honey drew considerable comment from readers. We received a few more complaints about honey being sold as " manuka" which didn't appear to be the real thing. And we also heard from a couple of honey packers, including Peter Bray of Airborne Honey, LEESTON. Peter was able to provide us with some interesting details concerning the manuka standards his company uses.

First of all, it would appear that the colour variation isn't normally as widely varied as was suggested in Crane and Walker's Directory of Important World Honey Sources. Recent samples analysed by Peter test out at between 64mm and 105mm, a narrower range than the 69mm to 140mm reported by Crane and Walker.

Peter also hasn't noticed a great difference in colour between North Island and South Island manuka honeys, although he does say that some Northland manuka has tested out a bit darker, probably due to the presence of other nectar sources blooming at the same time.

We also learned a bit more about pollen content analysis, and manuka pollen in particular. Manuka pollen is very finely grained, at around 7 microns. This equates to around 800 pollen grains for the same volume of pollen as one pollen grain of Nodding Thistle. The small size of manuka pollen grains explains why large amounts of those grains are usually in manuka samples, even though beekeepers don't generally recognise manuka as a pollen source.

However, the explanation for what happened with that sample of manuka which only had 15% manuka pollen, but which tested out as having the special non-peroxide antibacterial property found only in manuka, is more likely tied up with pollen percentages vrs. actual pollen amounts.

Pollen analysis assumes that the pollen in nectar comes from the pollen grains collected at the same time by the foraging bees. However, this can sometimes be greatly altered by the pollen which has already been stored by the bees in the hive.

This isn't as crazy as it sounds, especially when you consider the way manuka is extracted, and the value of the honey. Prickers are now used throughout New Zealand to help break up those protein chains which give manuka its thixotropic property (and make it so difficult to extract). The prickers are likely to dislodge more stored pollen in frames than conventional extraction methods, especially if manuka-filled combs are pulled from the brood nests in an effort to get every last drop of the high-priced product.

To get around this problem of under-represented pollen content honeys, it's important to not just calculate the percentage of each type of pollen in a sample. You also have to do a total count. If a 10g sample (the industry sample) has an actual manuka pollen count of over 200,000, the sample is likely to be predominately manuka, even though the presence of large amounts of other pollens may mean the honey has far less than 70% manuka pollen.

The last point which Peter Bray makes is that for good manuka identification, all of the currently available tests need to be viewed together. Then, even if one test (such as pollen count) appears abnormal, the probability will still be high that the sample is manuka.

– Cliff Van Eaton, AAO, TAURANGA

BEEFAX

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APIARIES ACT TO BE EXTENDED

At a meeting held on April 26 between representatives of the MAF Regulatory Authority (MAF RA), MAF Quality Management and the National Beekeepers' Association, Dr. Barry O'Neil, the Chief Veterinary Officer, announced that provisions of the Apiaries Act contained in Section 182 of the Biosecurity Act will be extended until October 1, 1998. Section 182 refers to a variety of Apiaries Act provisions, including the apiary register, First Schedule (exotic) bee diseases, Second Schedule diseases (such as AFB), and abandoned apiaries. The Biosecurity Act had been scheduled to repeal all of these provisions on June 30, 1996, unless relevant Pest Management Strategies were in place by that time.

According to Dr. O'Neil, the decision to extend these Apiaries Act provisions has been made for two reasons. First, the MAF RA has identified a major deficiency in the current Biosecurity Act relating to the implementation of the rules contained in any Pest Management Strategy (PMS). An amendment to the Act is currently being drafted which would allow PMS rules to be enforced. However, it is unlikely that this amendment will be passed by Parliament by the end of June. The amendment not only affects the NBA's proposed PMS for AFB. It also means that the Animal Health Board's PMS for Tb will not be ready for implementation by the end of June deadline. Dr. O'Neil says that both the provisions of the Animals Act and the Apiaries Act scheduled to be repealed will therefore have to be extended until the amendment becomes law.

The second reason given by Dr. O'Neil for the extension relates to the major reviews of EDPR and surveillance which are currently under way. These reviews are for all animals, not just bees. The reviews were scheduled to be completed this autumn, but it now appears that they will also not be ready until later on in the year. There is a direct linkage between these reviews and the Biosecurity Act, because the diseases the reviews relate to are also covered under legal provisions of various Acts (including the Apiaries Act) due to be repealed by the Biosecurity Act on June 30.

At this point it is still unclear when the AFB PMS will be considered by the Minister, or for how long government funding for either the apiary register, or the honey bee EDPR and surveillance programmes will continue. However, the announcement does at least give these issues important breathing space, and hopefully should ensure that sufficient time is available for the MAF RA to consult with the beekeeping industry before any final decisions are made. Dr. O'Neil said the 1998 date was chosen because it provided for the maximum amount of time for such an extension, rather than because the MAF RA believes the various programmes should necessarily continue to run in their current form until that time.

In the March 15 issue of Sentinel, the MAF RA journal, it was announced that as a result of consultation with an agricultural industries working group, Pest Management Strategies for exotic diseases are not likely to be put in place "

for at least 18-24 months". To facilitate a process for determining government involvement, the MAF RA is preparing a list of exotic diseases that could have a "serious socioeconomic impact on New Zealand".

BEE MITES IN BC

On November 16, Leaf Bellaar-Spruyt was fined by the court for illegally importing honeybee queens from California. Fortunately, Leaf lives in Quebec, Canada, and was convicted in that country. However, you have to ask yourself -- could the same thing happen here in New Zealand? Two of the numerous problems that might accompany illegally imported bees from overseas are the Varroa and tracheal mites, and based on what I have learned in the last several months, either of them would devastate the apiary industry in New Zealand.

Recently I visited beekeepers and MAFF apiary staff in British Columbia (BC), Canada. I very quickly learned of the catastrophic affects Varroa and tracheal mites are having on beekeeping there. In fact, while I was talking with Paul van Westendorp, the Provincial Apiarist for BC MAFF, he received a report from a beekeeper who runs approximately 600 hives and had just completed his early spring round of hive inspections. The beekeeper had lost over 65% of all his colonies, and 95% in one large yard!

The beekeeper said that in the autumn he had carried out the recognised Varroa treatments using Apistan strips and was confident that all was as it should be. However, as Paul explained to me after talking with this beekeeper, although the treatments had apparently been carried out correctly, there had been some fine weather after the treatments, and with the feeding given at that time, the colonies had been stimulated to produce more brood. This had allowed for a further cycle of Varroa development and infestation. By spring it was a disaster.

The Varroa and tracheal mites have been steadily moving through hives in much of Canada since 1988. In the Fraser Valley, just north of Vancouver, BC, 65% of colonies were wiped out in 1993/94, and in each year since there have been losses of 15-20%, with some much higher losses at times. The decrease in colonies has caused a great problem for horticulturists, with pollination fees increasing from $40 to $70 per hive. Many contracts are in jeopardy, and I even heard of hobbyists with 10 hives being approached by desperate growers. A number of beekeepers there will not be able to fulfil their pollination contracts this season.

In BC, there has been a reduction from 4000 beekeepers in 1989, to 2221 in 1995 (a decrease of 44%). The number of hives in the province has reduced from 50, 000 in 1989 to 41,750 six years later, a decrease of around 17%.

Based on the BC 1995 Annual Beekeepers Report, it appears that the incidence of both tracheal and Varroa mites is each around 13% of colonies. Although not all areas have hives infected with either one or both of the mites, the rate of spread is very rapid. Only Vancouver Island remains free of both mites.

Last year, two hives infected with Varroa were found to have been moved onto Vancouver Island. Fortunately, the area was quite remote and did not have a large number of beekeepers. All hives within 5 miles, and 50% of hives between 5 and 10 miles from the infection, were inspected by MAFF apiculture staff. No further Varroa mites were found and everyone is hopeful that no harm has been done.

The BC MAFF is relying on education to prevent any more such incidents,

although they do have a Bee Act to allow for prosecution if any other hives are found to have been moved onto the Island. However, by comparison, Canadian MAFF staff I talked to were quite envious of New Zealand's honey bee EDPR and surveillance systems, and our preparedness for dealing with an illegal importation of infected bees.

- Phil Sutton, AO,

TIMARU NZ ECO-LABEL PROPOSED

According to Export News (April 15), New Zealand is to get the world's first country-of-origin eco-label for food and beverage products. The as yet unnamed label is being managed and developed by the Project 98 Trust, a joint initiative between government, private sector and environmental interests. Organisations involved include Heinz-Wattie, Tradenz, the Apple and Pear Marketing Board, Federated Farmers, AFFCO and the Maruia Society.

The project is expected to cost $1 million, and according to proponents will set a New Zealand standard, hopefully stimulating a country-wide environmental improvement programme. Organisers say the label is vital because despite New Zealand's image as a country that is rich in natural environment and agricultural products, we are not considered to be committed to environmental conservation and safety. Consequently our food and beverage products are not seen to be as safe as those from Switzerland, Australia and Canada.

Two years ago Tony O'Reilly, chief executive of H.J. Heinz Company, recognised this weakness and challenged the NZ food industry to create an "environmental oasis" branding position. Since then, many organisations and companies have pursued improvement programmes.

The proposed eco-label will comprise two parts: a "clean" food standard, and a " green" process standard. The label will scientifically support a general market position as "clean and green". According to Trust chairperson David Irving of Heinz-Wattie, "the eco-label will allow marketing claims to be backed by independent certification. Project 98 sees no future in adopting a ' greenwash' approach to marketing New Zealand's food and beverages which has no meaning". Irving says customers increasingly want to see evidence from producers that they have an environmental management system in place.

Irving says the label should emulate a programme which has been run by Heinz Italy since the early '80's. "There we turned a meticulous quality assurance programme into a competitive advantage by creating a model farm-to-factory programme called 'OASI Ecologica', or 'environmental oasis'". The programme follows strict objective standards set by a respected independent body which helped food producers overcome the scepticism of consumers.

ORGANICS GROUP FORMED

New Zealand's organic food producers have joined forces to promote their products in export markets. The group is called the Organic Products Exporters Group, and its formation was prompted by significant world-wide growth in sales of organic products. The world market for certified organic products is already over NZ$7 billion, although currently only a small percentage is internationally traded.

Among the group's founding companies are Wattie's, the Kiwifruit Marketing Board, and the New Zealand certifying agencies Bio-Gro New Zealand and the Bio

Dynamic Farming and Gardening Association (which administers the Demeter standard).

Membership of the group, which costs $350 annually, is open to any organisation with an interest in the export of New Zealand certified organic products. For more information, and to apply for membership, contact Graeme Solloway at Tradenz in Wellington, ph. (04) 499-2244.

Source: Export News, February 5, 1996

HONEY BEE NUTRITION (part 1)

Protein

Protein is required by bees for development of body tissues, muscles and glands (such as the hypopharyngeal glands). Pollen consumption by young bees begins within 12 hours of emergence; mass consumption begins when bees are 42 to 52 hours old. At this time the bees' hypopharyngeal glands, fat bodies, and other internal organs develop. Pollen consumption by adult bees declines following cessation of nursing duties at 10-14 days after emergence. Food consumption by adult forager bees switches to mostly carbohydrate (honey) consumption.

Pollen composition and nutritive value is dependant on the plant source and is affected by air temperature, soil moisture, pH and fertility. Consequently, protein levels in pollen can range from 8 to 40 percent. Pollen consumption per colony has been reported at 20 to 30 kg (and as high as 40kg) per year.

Bees require 10 amino acids in their diet for normal development. These are arginine, histidine, lysine, tryptophan, phenylalanine, methionine, threonine, leucine, isoleucine, and valine. Absence or lack of anyone of these amino acids in the bees' diet severely affects nitrogen equilibrium and development. Research has demonstrated that many pollen sources (eg., willow and dandelion) may lack one or more of the 10 essential amino acids. Dandelion (American) has been shown to be deficient in tryptophan and phenylalanine.

The essential amino acids in pollen deteriorate during storage, even if frozen. Deterioration at room temperature is rapid, loosing 76% effectiveness in stimulating hypopharyngeal gland development in worker bees after the pollen has been stored for one year.

The location of pollen mixtures in the hive determines how quickly the diet will be consumed. Essentially, the closer the pollen mixture is placed to the brood, the faster it will be consumed. Reports indicate that pollen placed beyond 5cm of the brood will not be used by nurse bees.

As you would imagine, the amount of brood food available correlates with the number of bees reared. There is also a correlation between the amount of brood food the larva receives and its weight and longevity as an adult.

Pollen stored by bees undergoes biochemical changes (such stored pollen is known as "bee bread"). Bees add substances that inhibit pollen germination, increase storage stability, and perhaps even increase digestibility and nutritive value. It has been demonstrated that bees live longer on pollen removed from combs than on pollen removed from traps.

Biochemical analysis of stored pollen shows an increase in pH of stored pollen and increased levels of water-soluble proteins. A lactic acid-type metabolism of stored pollen occurs which is believed to contribute to its stability.

Additionally, stored pollen generally has a specific bacterial flora (Pseudomonas, Lactobacillus and Saccharomyces genera).

Carbohydrates

A colony may require as much as 70kg of honey annually to survive in extremely cold countries, although bee hives in warmer climates can sometimes consume more honey than those where the bees cluster throughout the winter.

The carbohydrates a bee consumes generally comes from nectar produced by floral or extra-floral nectaries of flowers. Concentration of sugar in nectar can range from 4% to 60%. Nectar most attractive to bees ranges from 30% to 60%. Sucrose, glucose and fructose are the common sugars in nectar. Nectar is enzymatically converted to honey by bees, with most of the sucrose inverted to glucose or fructose.

Pollen and bee bread also contain 30-35% sugar. In bee-collected pollen the level of sucrose sugars averages 2.71%. Glucose and fructose together average between 18 and 41%. These values are reversed in hand-collected pollen.

Sucrose is more attractive to bees than glucose or fructose. And sugars such as mannose, lactose, galactose, and raffinose are toxic to bees. Mannose is so toxic that it will kill bees within a few minutes of feeding. Lactose is found in milk and milk products, while raffinose occurs naturally in soybeans.

Lipids

Bees require some dietary lipids (fatty acids, sterols, and phospholipids) in their diet, as sources of energy, for the synthesis of reserve fat and glycogen, and as essential structural components of many cell membranes. Under normal conditions these requirement are provided by pollen. Lipid content of pollen ranges from 1.5% to 18.9%, but is usually 4-6% in most pollens.

Bees require sterols in their diet for normal growth development and reproduction. One class of sterols (cholesterol) is essential to bees. Cholesterol (or 24-methylene cholesterol) is present in most pollens. Cholesterol is the precursor for the production of moulting hormones in most insects. The major portion of sterols incorporated into the tissues of the brood larvae originates from the worker bee's sterol pool, not directly from brood food.

Specific chemicals in pollen may serve as attractants for honey bees. It has been reported that the material in pollen attractive to honey bees is a sterol or a mixture of sterols, especially 24-methylene cholesterol (although it has been reported that the addition of sterols to synthetic diets made no difference with regards to attractiveness to bees). It has been demonstrated that anise oil and fennel oil are effective and economically feasible attractants when added to dry pollen substitutes.

[Next month: vitamins and minerals]

- Robert Rice, AAO, LINCOLN

AVONSWEET

Avonsweet, or Avon Glucose Syrup, is proving to be a winner with some New Zealand queen producers. According to Jon Fear from Waikato Honey Products, Avonsweet can improve the feeding of mating nucs while at the same time

controlling the robbing which can lower mating success rates.

Avonsweet is a low-viscosity syrup manufactured by the dual enzyme hydrolysis of maize starch (ie, two enzymes are used to break the starch down). This results in a carbohydrate composition of roughly 40% dextrose (aka glucose), 35% maltose (aka malt sugar) and 25% high carbohydrates. Because of the process used in Avonsweet's manufacture, the product appears to be a well-balanced blend of sugars. It is also non-toxic to bees, because the inversion process uses enzymes, not the old acid method.

Avonsweet has a low viscosity and is non-crystallising, but because of the low viscosity beekeepers may have some problems with equipment normally used to pump standard A1 sugar syrup. Bryan Clements of Waikato Honey Products says that they have had to resort to tipping the drum contents into buckets to feed their nucs. However, Bryan still feels that the benefits are worth the small problems encountered so far, and believes that in time they will be able to develop a faster feeding method.

One of the major benefits of the product, according to Bryan and Jon, is the fact that bees don't appear to rob Avonsweet the way they do with the more traditional sugar syrups. According to Bryan, you can even spill Avonsweet on the deck of the truck and the bees won't rob it.

Jon has been feeding the same volumes of Avonsweet to mating nucs as he previously did with A1. Interestingly, though, while it takes one day for the bees to take up the A1 sugar syrup, it takes about four days with Avonsweet. The bees store the product well and build good wax on it. The bees are also not over-stimulated by the feed.

We expect Avonsweet will also provide the same benefit to small colonies that American beekeepers have noticed when they feed invert sugar, ie. the colonies can store more of the product, since 1) they don't have to expend as much energy inverting the sugar as they do with A1, and 2) they don't have to evaporate as much moisture (A1 contains 33% water, whereas Avonsweet has only 22%).

Avonsweet has a medium sweetness and is available in 200 litre drums. Avonsweet isn't cheap, however, at $1023 (+GST) per tonne, or $384 per 300kg (200 litre) drum. Adjusting for the 78% solids (ie, 78% sugar), this works out at approximately $1.64 per kilo sugar equivalent. Nevertheless, according to Bryan, "Avonsweet's use with smaller colonies is fantastic and we are very pleased with it."

Avonsweet is available from N.Z. Starch Products Ltd., 319 Church Street, PO Box 13024, Onehunga, Auckland, ph (09) 634 2119, fax (09) 636 7519.

- James Driscoll, AAO, PALMERSTON NORTH

THOUGHTS ON APIMONDIA

For me the most interesting thing about Apimondia was not the interminable, often badly prepared and delivered papers, but the opportunity to browse for several days among the trade displays and exhibits. The schoolboy French and German were hastily dusted off and put to work - how I wished I could speak Spanish and Italian!! Also the opportunity to visit several Swiss beekeepers was something I will always remember and value.

It took me some time to absorb the extent of the European beekeeper's

investment in plant. I often think that Kiwi beekeepers tend to be overcapitalised in the equipment department but, believe me, you have not seen anything until you look through a Swiss beekeeping outfit with some 30 hives and more equipment than the average 500 hive Kiwi operation.

The reasons for this are twofold. Firstly, our average Swiss beekeeper harvested 10 kg/hive last summer but sold his honey for NZ$ 18 per kg (ie $180 per hive gross). Secondly, the crop is treated as if it were worth $18 per kg. Nothing is too good for the honeyhouse - stainless steel everywhere and all the latest gadgets and gismos. The hives are built into one wall of the " beehouse" and the rest of the building taken up with all the gear. Supers slide back like drawers into the beehouse and all operations are conducted in comfort. Quite a different concept from NZ beekeeping!

Two pieces of equipment that I saw at Apimondia might possibly be of interest to NZ beekeepers:

- "Cire-Press" - This was an interesting new concept of dealing with cappings. It has been developed by Limousin-Apiculture in France. (Some of you may remember Thierry Fedon who visited NZ a few years ago; it is his father who has built the machine).

The vital statistics of the machine are 1.4x1.0x0.85m. It comprises a stainless steel trough with a flared top into which the cappings fall. The cappings are moved into a compression chamber where the honey is squeezed out and then the very dry wax is extruded in cake form from the end while the honey is piped away. The business-end where the wax appears looked a bit like an old-fashioned mincer, with the wax being extruded in very dry, flaky, cake form. No heat is used at all. Capacity is reportedly to be 35 supers /hour.

I watched this machine working for some time and was fascinated by its possibilities here in NZ. The disadvantage is that the wax cake still has to be melted down and blocked at some time. However, the lack of heat and mess (which is associated with our various types of hot-tops) appealed to me greatly, and the cake is so compressed that it could easily be stored till winter. I have a fact sheet if anyone is interested.

[Editor's Note: this device was also the subject of an article in the November edition of BeeFax, but it's so interesting that it's definitely worth describing again]

- I'll call the second gadget "The Thomas Honey Grinder", for want of a better name. This was sitting alone on the Thomas & Sons stand and I looked at it several times over the conference. It had me beat.

Could it be some sort of a drum reconditioner? I consulted another Kiwi who went to look at it and returned shaking his head. In the end, curiosity had to be satisfied and I consulted one of the Thomas staff with whom I conversed in " Franglais".

The machine had a stout steel stand with a 44 gallon open-topped drum fastened to it. Twin steel pillars running up one side to a height of about 2m supported a heavy duty motor with a vertical shaft centred above the drum. The bottom of the shaft had three mounted knives (like uncapper blades), each ending in a little wheel designed to locate against the inside wall of the drum. A 100 mm diameter pipe attached to a pump opened just above the knife blades.

The machine operates by turning the blades while applying downward pressure. This literally grinds the honey into a slurry which is then pumped up the pipe

and away. No heat needed (although, you do need an open-topped drum!)

The European fixation with HMF and diastase level as a measure of quality has spawned both of these inventions, as the use of heat in honey processing is reduced as much as possible. Is there a place for either in NZ? Perhaps there is if we wish to produce what the European market wants and can persuade them to pay European prices for our product!

- Ted Roberts, AAO, PALMERSTON NORTH

GADGETS AND GISMOS

Iridium - The Ultimate Gismo?

Iridium is described in the Oxford Concise Dictionary as "a white metallic element of the platinum group....". But not this Iridium!

We are now well and truly into the age of super communications, and many beekeepers are on their way to being part of this matrix of communication with faxes, cell phones, radio telephones, GPS's, and electronic logbooks downloadable to their PC's. Iridium may be the next step to personal global communication.

The Iridium system is a satellite-based, wireless personal communications network designed to permit any type of telephone transmission (voice, data, fax, paging) to reach its destination any where on earth, at any time.

It will revolutionize communications for businesses, travellers, residents of rural and remote areas, disaster relief teams, and other users that want the features of a hand-held unit with a single number worldwide. The system is being financed by a private consortium of telecommunication and industrial companies and will be in operation in 1998.

Unlike present telecommunication networks, the Iridium satellite-based system will track the location of the telephone handset, providing global transmission even if the subscriber's location is unknown. The handset will also interface with laptop PC's, pagers, datalogers and so on.

The space segment of the system is based on an inter-connected constellation of 66 satellites about 420 nautical miles above the earth. These in turn connect through a terrestrial gateway to the handpiece.

When the Iridium telephone is activated, the nearest satellite in conjunction with the Iridium network will automatically determine the account validity and the location of the user.

If the subscriber's local cellular system is unavailable, the telephone will communicate directly with a satellite overhead and be transferred from satellite to satellite through the network to its destination. The subscriber will select among cellular or satellite transmission alternatives, depending on compatibility and system availability, to dispatch a call.

The system will cost at least $US4 billion to set up, so what will be the cost to the end user? Given that by the year 2000, there will be at least 142 million cellular users and at least 147 million pager users worldwide, Iridium envisages a start point of 650,000 voice subscribers and 350,000 paging subscribers which represents only 0.45% and 0.25% of those markets respectively. The potential is enormous.

Will you be one of those subscribers?

- Dave Grueber, AO, BLENHEIM

Beekeeping Tidy-Ups

Always looking for a pen to write things on a hive? How about stapling a leather/vinyl pouch to the back of your smoker and slipping a crayon or ear tag marker pen inside that. While you are at it, why not make a few extra pouches and glue or rivet them to the dash in the truck to keep your ballpoint pens or pencils handy.

And if you're always being plagued by hats and veils cluttering up the inside of your already full truck cab, here's an idea from an enterprising beekeeper in the Bay of Plenty. Simply fasten two shock cords at about a 300mm interval across the inside roof of the truck. When you get into the truck, you just turn your hats upside down, slip the brims underneath the shock cords, and hey presto, the hats and veils are securely tidied away!

- Murray Reid, AAO, HAMILTON

RETAIL HONEY PRICES SURVEY

What follows are this month's survey figures, as reported on 29 April:

Centre	Clover/Blend Ave/Range	Bush Blend Ave/Range	Manuka Ave/Range
Whangarei	$2.40/$2.08-$2.88	$2.19/$1.99-$2.37	$4.38/$3.21-$7.50
Auckland	$2.35/$1.95-$3.00	$2.26/$2.17-$2.37	$3.95/$3.25-$4.52
Hamilton	$2.35/$2.11-$2.89	$3.15/$2.90-$3.41	$3.93/$3.75-$4.31
Tauranga	$2.62/$1.99-$3.75	$3.00/$2.05-$3.95	$4.37/$3.25-$6.95
Palmerston N	$2.60/$2.10-$3.01	$2.32/$2.20-$2.38	$5.73/$4.19-$7.95
Blenheim	$2.50/$2.50-$2.50	$2.58/$2.10-$3.70	$5.00/$3.10-$7.75
Christchurch	$2.46/$1.80-$3.09	$2.83/$2.09-$3.55	$4.96/$3.85-$7.15
Dunedin	$2.54/$2.16-$3.35	$2.89/$2.25-$3.52	$4.23/$3.85-$5.50
Average	$2.48 (500g)	$2.63 (500g)	$4.56 (500g)
(Last Survey)	($2.42)	($2.70)	($4.57)

BEEFAX

Vol 1, No 8

June, 1996

1996 HONEY CROP

As we promised in last month's BeeFax, here is MAF Quality Management's New Zealand honey crop estimate for 1996. The information is being provided exclusively to our readers six weeks earlier than the traditional release of honey crop statistics at the NBA conference.

The information is summarised in the table below. The total New Zealand crop is estimated at 8610 tonnes, an increase of 7% over last year. The crop is, however, slightly less (-1%) than the rolling six year average of 8735 tonnes, and significantly less than the record 1994 crop of 11819 tonnes.

Interestingly, while the final crop is about average, most beekeepers were of the opinion that their production was "patchy", with some local areas and sources doing well, while others were disappointing. Significant increases in honey production were reported in a number of regions, including Auckland, Waikato, King Country and the West Coast. Crops were down in the Bay of Plenty, Canterbury and Southland.

The average production throughout the country was 30 kg/hive, 9% more than last year. The difference in percentage increases between tonnes and kgs/hive reflects the fact that there was a significant downturn in numbers of registered hives reported to MAF by beekeepers during 1995-96.

For those of you who are interested in the mechanics, the MAF Quality Management honey crop survey is carried out in May of each year. Apicultural Advisory Officers in each Apiary District print out a list of all beekeepers with 250 hives or more, and then contact at least 75% of those beekeepers, asking them for a confidential report on their crop. Total production figures are usually given, and are then worked back to kgs/hive.

Because most Apiary Districts have several distinct climatic zones (Invermay, for example, includes both Southland and Central Otago), the beekeeper reports are grouped by area. A figure for total hive holdings for the area is then calculated, and kgs/hive averages from the beekeeper reports are multiplied by the total number of hives in each area to come up with a final crop figure (in tonnes). Because not every beekeeper in the country is surveyed, the final figures are not absolutely accurate. However, we do believe that they give a very good picture of the amount of honey produced in New Zealand each year.

The honey crop estimate has been carried out by the Ministry of Agriculture for many years. The figures are used by honey packers and exporters, and appear each year in the New Zealand Year Book published by Statistics New Zealand. The work is carried out as a complimentary (free of charge) service to the New Zealand beekeeping industry.

GLOBAL NETWORKING

According to a recent newspaper clipping, an increase in wine sales to the UK came about simply as a matter of availability and New Zealand finding a niche in the market. However, developing markets overseas can often be a difficult and frustrating process. It can also sometimes be more costly than it is worth.

It was with these two aspects in mind that the Eco-Network Trade Journal was launched earlier this year. It is hoped that the journal, by using global networking, will be a means by which traders can break down some of the frustrating barriers they face when trying to develop outlets for their products. For instance, the journal could allow for the development of contacts in Europe interested in our products. Europe is showing an increasing demand for "clean, green" products free of toxic residues, the sort New Zealand can offer.

The Eco-Network (ENWO) has been developed by businesses to promote a fast and effective method for enhancing products and services of an environmental nature. The journal is now being circulated in 12 countries and is read by 15,000 subscribers. The journal is published on a two monthly basis.

The ENWO information circle provides for the exchange of marketing information concerning contact names of suppliers or buyers, and news regarding trade fairs and exhibits. It's also a potentially quick and cost-effective method of increasing overseas trade partnerships.

A membership to ENWO includes special rates for legal advice, translation of business documents, entry into seminars, conferences and exhibits, a free translation of all articles into French, German or Greek (upon request), management information on environmental polices, advice from experienced international trade agents and soon, the use of the Internet as a marketing tool.

The benefits of ENWO to the beekeeping industry could be rapid global promotion of existing or new products, the quick location of established distributors and warehouses, and the up-to-date dissemination of scientific information on new technologies which may have direct impact on industry.

For further information contact:

ENWO-NZ
PO.Box 730, Timaru
Ph/Fax: (03) 684 6296
Contact: Warren Reynolds

- James Driscoll, AAO, PALMERSTON NORTH

MOULDS POSE BEEKEEPING RISK

If you thought you had identified every possible hazard in your beekeeping enterprise...think again. A study recently conducted in Canada has shown that moulds pose a significant risk to beekeepers.

The study was carried out by researchers at the Beaverlodge Agricultural Research Centre, in Alberta. It was prompted by observations of mould growth in a colony over-wintering facility. Samples were also collected from a super storage shed. The mould samples were analysed, and in both cases it was found that the level and types of airborne mould spores were sufficient to cause concern for worker safety.

The preliminary results led to a larger study, in which a health survey questionnaire was given to a cross-section of commercial beekeepers. Air quality samples were also obtained from their beekeeping sheds. The survey indicated that "there appears to be a strong association between reported respiratory symptoms, eye, nose and throat irritation, and the activities monitored (sweeping and cleaning) where there was exposure to high levels of airborne moulds."

According to the study report, depending on the species of mould involved, mould spores have the potential to create a number of problems for beekeepers. Many people are allergic to mould spores and frequently have adverse reactions at specific times of the year. The report lists 82 species of mould that were collected during the study. Of those, 48 are reported to be potentially pathogenic, potentially toxigenic, allergenic, or two or three of those factors combined.

The report isn't all bad news, however. The authors say that a number of things can be done by beekeepers to reduce the risk of exposure to mould spores. To begin, any time someone sweeps out a super storage area, they should wear a respirator capable of filtering small organic particles and volatile chemical compounds (down to 2 microns). Wearing eye protection, overalls, and even gloves, which can be removed and washed, is also recommended.

Good ventilation is also a potential help, although at least one of the outdoor hive equipment cleaning sites sampled was found to have higher mould spore levels than some of the indoor sites. A good ventilation system that moves a lot of outside air through the workroom can be helpful, but the authors believe a ceiling fan that just circulates the air could in fact be harmful (because it would also stir up the spores).

One very good practice is to moisten the dust and dead bees on the floor of the shed before sweeping begins. This will reduce the amount of spores that get put into the air during the sweeping. A rubber squeegee, rather than a broom, is also recommended for the same reason. However, the authors mention that care must be taken to ensure the floor drys thoroughly afterwards. Otherwise the moist environment may create an ideal breeding ground for more mould.

Source: Alberta Bee News, June 1995

BEEKEEPER SAW BENCH

Back in the '50's, a saw bench was described in the NZ Journal of Agriculture called the "beekeeper's saw bench". The bench was at one stage a well-known tool in New Zealand's beekeeping industry. However, in resent years so many manufactured saw benches have become available that the beekeeper's saw bench seems to have been forgotten. Well, until recently, that is.

MAF Quality Management was looking for a saw bench that could be used in the Solomon Islands to make beekeeping equipment. It had to be robust, reliable, simple to use, and have minimal parts that might become detached and go walk-about. We also wanted an all-in-one bench that could make all the components of a hive.

We soon discovered that there was nothing "off-the-shelf" that really met our requirements. However, tucked away in the back of a certain tall, slim, grey-haired Apicultural Advisory Officer's head was the memory of the forgotten saw bench. What's more, a quick look in his famous office filing system revealed

the old article and plans. I took these plans to a local engineer in Dunedin and we now have a first saw bench that will soon be off to the Solomon Islands.

I have had the pure joy of trialing this bench and I must say I am impressed. The bench is very well-thought-out and designed. Its secret is a swing arm which gives the bench an easy-to-use cross cutting ability as well as the normal ripping ability.

The saw blade is mounted under the bench top on the swinging arm and for cross cuts the wood is placed against a stop on top of the bench. A pedal that sticks out of the bench is then pushed with the foot and the blade rises though the bench top, cutting the wood.

For ripping, the stop is turned around and becomes the guide. A detachable screw is attached to the swing arm and the blade is wound up though the bench ready for ripping. For rebates, handles, etc, a trenching head is fitted, and for top bars two different diameter blades are fitted with a spacer. This means the top bar is cut and grooved in one push though.

If you are interested in this bench you can contact me at MAF Qual, Invermay, for more information.

- David McMillan, AAO, INVERMAY

COLOURFUL OVERALLS

We get all sorts of inquiries at MAF. Late last year, an engineer from a civil construction company rang regarding a problem his highway construction workers were having with honey bees. It seems that bees were buzzing his workers and making a real nuisance of themselves. After due questioning we ruled out the likelihood of a nearby apiary where the beekeeper may have been working the bees recently. And the problem had been going on for months, so we couldn't even blame a passing bee truck with unscreened hives on board.

After eliminating all the likely possibilities, we finally considered the experimental 'high visibility' clothing the road workers were using. The suits were a bright orange colour. Previous suits had been candy stripers...blue bottoms with lime green yellow tops. Just the colours the bees see best!!!

I don't know whether the material the suits were made from was attractive as well, but a local Waikato beekeeper is working with the firm now and trying out other combinations of overalls in his bee yards to see if it is the colour or the fabric.

- Murray Reid, AAO, RUAKURA

HONEY BEE NUTRITION (part 2)

Vitamins

The precise functions and requirements of many vitamins have not been demonstrated for honey bees. Pollen normally contains seven B-complex vitamins (thiamine, riboflavin, pyridoxine, pantothenic acid, niacin, folic acid and biotin). These are essential for most insects. Studies show that vitamins have no effect on longevity of bees, but pantothenic acid has a great influence on the development of the hypopharyngeal glands. Additionally, thiamine or riboflavin are required for the development on the hypopharyngeal glands.

It has been shown that of the B-group vitamins, pyridoxine is the only one essential for normal brood rearing. The effects of two other vitamins, gibberellic acid and inositol, have been demonstrated on brood rearing. Diets lacking in gibberellic acid result in larvae dying in the 3rd and 4th day of development. When inositol was substituted for gibberellic acid in artificial diets, normal brood rearing continued.

Very little research has been done on the vitamins A,D,E, and K. It has been shown that vitamin A plays a role in the vision of honey bees. Small amounts of vitamin A and E have been identified in pollen, but both D and K were absent. Royal jelly has been found to be devoid of vitamin E.

In experiments where caged bees were fed vitamins A, D, E, and K, or a complex of all four vitamins, it was observed that bees fed diets containing vitamins A and K or the complete complex reared twice as much brood as bees fed on the control diet.

The lack of vitamins may be one reason why some pollens and pollen substitutes are of little nutritional value.

Minerals

Very little is known about the mineral requirements of bees. These requirements are usually met by the consumption of pollen. Minerals are derived from the ash content of pollen. Pollen usually contains between 2.5 and 6.5% ash by dry weight. Studies show that potassium, phosphorous, calcium, magnesium, and iron are the most commonly occurring minerals in pollen.

The most abundant minerals in the body of a bee are phosphorous and potassium. Calcium, magnesium, sodium and iron are present in considerably smaller quantities. Based on research which has found potassium, sodium, calcium, magnesium, copper, manganese and zinc are essential, it has been suggested that artificial diets should contain an ash content of about 3% by dry weight.

It should be noted that excessive levels of minerals can be toxic to bees.

- Robert Rice, AAO, LINCOLN

Thumbs Up for HACCP

During a recent visit to New Zealand, Dr Jeffrey Springal, head of UK supermarket giant Sainsbury's Scientific Division, spoke at the Fishing Industry Conference.

Dr Springal, a 25 year veteran of the food and beverage industry, is a keen supporter of the principles of ISO. Dr Springal believes that the Hazard Analysis Critical Control Point (HACCP) system is the best so far developed to assure consistent quality and food safety. He also said, "in my view it provides what I have considered to be the missing component in ISO 9002. I think if we were starting from scratch, I would support the implementation of HACCP first, followed by certification to ISO 9002".

Dr Springal said hazards in food processing are greater than they have ever been and the need for effective control systems was never more pressing. He cited three reasons for this. First, the growing popularity of convenience food means that product is being prepared further from the point of consumption, which potentially increases the risk to quality and safety. Second, adding

value to food (the move towards composite foods) is diluting the traditional preservative factors. Third, consumers also demand products that are less acidic, have fewer preservatives and are produced with greater reliance on chilling.

Sainsbury's has some 16,000 product lines from 2,500 suppliers worldwide, and moves them from 30 distribution depots to 350 stores, servicing 9 million customers per week. Under Sainsbury's product management system, it is a fundamental requirement that all suppliers adopt the HACCP approach to manage the quality and safety of their products.

The correct application of an HACCP approach could have easily prevented a major food poisoning incident in the last 10 years - botulism in hazelnut yoghurt. The incident, caused by a small canning operation, devastated the UK yoghurt industry, with an overnight reduction in sales of 40%. That industry has still not fully recovered.

Source: Export News. August 1995

- David McMillan, AAO, INVERMAY

Hives, Microclimate and Production

What effect does hive design have on colony production and microclimate? Does the choice of hive components used from the selection available matter to the colony? Does any of this impact on profit margins? The answer to all of these questions appears to be Yes.

Bees undertake a range of activities within the colony in order to optimise the brood nest microclimate. These activities expend energy, presumably at the expense of net honey production. It has been shown that bees in white and shaded hives consume less honey than colonies in aluminium painted hives in an attempt to control hive temperature during hot conditions. It has also been shown that as the hive environmental temperature decreases, honey consumption per bee increases.

A beehive consists of many parts selected from a range of bottom boards, hive bodies, hive covers and paint colours. It is important that when we choose a combination we give consideration to the effect of our choice on the hive microclimate. The radiation, re-radiation and convection properties of hive parts can greatly affect the colony activities when attempting to optimise its microclimate.

When choosing components, give consideration as to why you make a particular choice. For example, should I choose a ventilated or non-ventilated bottom board? Ventilated bottom boards increase ventilation around the bottom of the brood nest and provide drainage, which is particularly important in wet climates. In hot, dry climates though, a deep bottom board provides clustering space for bees below the brood nest, thus avoiding the desiccation which would occur if the bees were to cluster outside the entrance.

Hive bodies (brood chamber and supers) can range in sizes, from the popular 10 frame Langstroth, to the modified Dadant (3/4), the jumbo, and the half depth. The choice of which to use is dependant on the efficiency of use compared to production, with consideration being given to the weight of full honey supers or other production purposes such as cut comb or section honey production.

The type of hive cover is of particular importance. Do you use a telescopic

lid or a shade board lid? In very windy conditions, the telescopic lid is less likely to blow off, but in hot conditions the shade board lid serves to reduce the effect of the sun's heat on the hive.

It has also been shown that in humid environments (and in particular hot, humid conditions) ventilated lids dramatically improve air flow through the colony, making if much easier for the bees to evaporate moisture from fresh nectar. Increasing air flow using ventilated lids increases net production by decreasing the amount of energy expended in ventilating the hive.

Inner covers are widely used, often in combination with ventilated lids. The inner cover provides insulation both from the hot sun and a cold winter. In very dry climates, it also aids in humidity control within the hive. If you use inner covers in conjunction with ventilated lids, you can remove the inner cover during the honey flow to increase ventilation, and then replace it in the autumn as winter insulation. The inner cover also provides a second margin of safety in case the hive lid blows off.

On the lighter side, we have the rock. The true value of the rock is often underestimated. It is used around the world to stop lids from blowing off in high winds, as a means of marking hives, and if you live in snake infested country (like OZ), it provides a much appreciated means of emergency protection!

- Robert Rice, AAO, LINCOLN

Bugging your Beehives

It has been estimated that up to 10% of managed colonies swarm each year (depending on the strain). To effectively control this natural swarming tendency, a beekeeper needs to inspect the colony for queen cells every nine days. Obviously in a commercial operation this would require a tremendous amount of time and resources. What's more, every time a beekeeper inspects a colony it takes two to three days before the hive returns to normal, equating to a loss in production. And since only 10% of the hives swarm, the beekeeper is disturbing over 90% of the hives unnecessarily.

An enterprising Swiss beekeeper has come up with a solution to swarming which does away with the need to inspect colonies. Instead, he listens to his colonies, and depending on what he hears can tell whether or not they are about to swarm. In fact, he believes he can get 21 days advanced warning of swarming. And he saves time and money, by only having to carry out swarm control on the hives that need it.

The beekeeper's method works like this. As a colony prepares to swarm, the queen is fed less and therefore lays less eggs. This drop in brood production results in a large number of nurse bees becoming agitated, since they have no brood to feed. The agitation is registered by the nurse bees producing increasing intensities of sounds in the frequency range of 200 to 300 Hertz. By using electronic detection devices attached to a microphone, which is placed through a small hole in the side of the brood box, the frequencies and intensity of the sounds being produced by the nurse bees can be measured.

Twenty-one days before swarming there is an increase in the sound intensity, with the maximum intensity at approximately 240 Hertz. This is before queen cells are being built, and indicates the bees' intent to begin swarming. At this point preventative action can be taken. The earlier swarm prevention is undertaken, the more successful it is.

Eight days before swarming, the sound intensity increases further, with the maximum shifting to a frequency of approximately 270 Hertz. And one day before swarming, the sound intensity increases again, with the maximum shifting to a frequency of approximately 300 Hertz.

By measuring the intensity of these frequencies, the beekeeper can determine which hives are in a swarming mode and which are not, thereby determining which hives need attention. The result is a saving in time and money, and hopefully an increase in production.

Source: American Bee Journal, September 1995

- David McMillan, AAO, INVERMAY

GADGETS AND GISMOS

(This Month: Murray's Helpful Hints)

Low-Cost Embedder

Embedding foundation is a chore, and to get set up with a purpose-built transformer can be expensive. A battery charger set to 12 V works just as well. Take the alligator clips off the charger cables and replace them with two metal probes. These can be as crude as a 75mm nail driven into a wooden handle with the charger cable taped down on the handle. The exposed end of the wire cable should be wrapped around the base of the nail and also protected by tape.

A very cheap 6 12V charger is available in some hardware shops under the brand name Arlec Chargette Charger for $29.95. We don't know how robust the charger is, but it should stand up to use as a wax embedder.

Paint brushes (1 and 2)

(1) If you're like me, you wash out paint brushes and then leave them in the container and forget about them. Then when you need them again, the bristles are all bent at right angles. To avoid this, drill a hole through the base of the brush and suspend the clean (but wet) brush over your pot on a nail pushed through the hole.

(2) If the ends of the bristles on your paint brush still have residues of paint on them after cleaning, attack the bristles with a wire brush. If there's too much paint for the wire brush treatment, you will need to use a paint stripper or solvent and at the same time make a resolution to clean your brushes more thoroughly next time!

Nailing Timber That Splits

If you can't be bothered pre drilling timber that is prone to splitting, dull the point of the nail by bashing the tip with a hammer or hitting the nail on a piece of steel or concrete. A nail with a dull point tears its way through the timber, rather than pushing through and splitting the fibers. There are no guarantees, of course, but try it anyway. If the timber still splits you can always curse and go back to pre drilling. And speaking of pre drilling, how did we ever get by without chuckless battery operated drills?

Nailing Supers

And while we're on the subject of nailing things together, I often see boxes on hives that either a) aren't held rigid on the diagonal, or b) are coming apart at the joints. When you look at these boxes you usually find the ones that aren't rigid haven't been nailed from both directions on each corner. If you take a bit of time to nail (or staple) the boxes along the side pieces (as well as along the ends), the boxes should remain rigid for years.

The boxes which are coming apart at the joints, on the other hand, usually don't have this side nailing, and as well have been fastened with the nails pointing straight up and down. Half-check joints like those found on bee boxes should always be fastened with the nails pointing at an angle into the bottom piece of wood. The nails then bite across the grain, and even when the wood swells with moisture, the nails usually won't pull out. These hints for good nailing used to be printed on the plastic bags of one popular brand of nails, but I haven't seen the bags now for a couple of years.

Flat Torch Batteries

There are a lot of rechargeable torches on the market these days, but if you still have regular batteries in a torch that you don't use very often (such as in the car or truck), then you can slow down the discharging by turning one of the batteries around, or placing a piece of paper or tape between one of the batteries and the base or top of the torch (depending on which part opens). If you do this, it pays to tape a note to the outside of the torch telling people what you have done. That still leaves the problem of how you get people to read the note. I haven't solved that problem as yet!!!

- Murray Reid, AAO, RUAKURA

	1991	1992	1993	1994	1995	1996	6yr Avg
Northland, Auckland, Hauraki Plains	668	1200	1033	1295	354	829	897
Waikato, King Country, Taupo	1057	1068	811	1946	962	1639	1247
Bay of Plenty, Coromandel, Poverty Bay	1470	998	958	1524	1426	1077	1242
Hawkes Bay, Taranaki, Manawatu, Wairarapa	811	1231	577	1442	1200	1367	1105
NORTH ISLAND	4006	4497	3379	6207	3942	4912	4491
Marlborough, Nelson, Westland	265	650	560	493	499	607	512
Canterbury*,							

North Otago	1965	2870	1611	2883	1685	1287	2050
South & Central Otago, Southland	1054	1543	1536	2236	1921	1804	1682
SOUTH ISLAND	3284	5063	3707	5612	4105	3698	4245
NEW ZEALAND	7290	9560	7086	11819	8047	8610	8735
Yield per hive (kgs)**	23.3	31.4	23.3	40.8	27.5	30.0	29.4

* Includes honeydew

** Total estimated production available for extraction divided by total registered hives

ANNUAL NEW ZEALAND HONEY PRODUCTION, IN TONNES

BEEFAX

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HONEY EXPORT REGS MAY CHANGE

The MAF Regulatory Authority (MAF RA) has recently announced its intention to change the Honey Export Certification (HEC) Regulations. The regulations, which give the government the power to issue export certificates for honey, were created under provisions of section 46 of the Apiaries Act.

The MAF RA hopes to include the changes in the Biosecurity Act Amendment Bill, which is likely to be put before Parliament this winter. The Amendment Bill is an important piece of legislation, since it also includes essential changes to the Biosecurity Act which are needed so that Pest Management Strategies (such as the one's for TB and AFB) have the legal powers they need to get underway. Sources in the government say that the implementation of both PMS's has been stalled because of serious flaws in the original Act.

In a related move, the current HEC Regulations were extended on May 27, along with Apiaries Act sections relating to disease control (see BeeFax, May 1996). The extension is to September 30, 1998, and is the longest extension allowed under the Biosecurity Act.

The extension solves a previous confusion in the Biosecurity Act relating to this extension. Originally, the expiry date of the HEC Regulations was June 30, 2000, even though the section in the Apiaries Act (section 46a) which creates the regulation was set to expire (along with the disease control sections) on June 30, 1996. It had been the government's intention to include the HEC Regulations in the Primary Produce Bill. However, it would appear that the Bill is unlikely to be passed by Parliament before June, 1998.

Of greater importance to beekeepers is the decision by the MAF RA to attempt to modify the existing HEC Regulations, by leaving some sections of the regulations out of the Biosecurity Act Amendment Bill, and giving other sections an unlimited extension (until, that is, they are replaced by the promised Primary Produce Bill). Although the drafting of the Biosecurity Act Amendment Bill is well advanced, the MAF RA recently approached both the NBA executive and MAF Quality Management (MQM) in a last-minute effort to seek their approval and advice on the changes.

The MAF RA believes that there are a number of sections in the current HEC Regulations relating to product quality which do not as a general rule need to be controlled by government. These include such things as freedom from foreign substances, tastes or odours, lack of fermentation, over-heating, maximum moisture content and container quality.

There appears to be common agreement between MQM, the NBA and the MAF RA, that such a change to the regulations is advisable, since product quality matters can be handled by additional certificate declarations negotiated with the importing country requiring such certification.

This is the same principle that currently applies to disease freedom certification. There is no general requirement for disease freedom certification in the HEC Regulations. However, importing countries may impose their own disease freedom criteria, which is included as a specific amendment to the general export certificate.

If the modifications to the HEC Regulations are included in the Biosecurity Amendment Bill, the changes may become law as early as this Spring. In that case, standard export certificates issued for honey will likely remain the same, but exporters will no longer need to make statements relating to product quality on their applications for export certification of honey.

Currently exporters must declare that the honey is free from substances, tastes and odours which are foreign to its natural composition, and that the honey does not have a moisture content in excess of 19% (20% for ling heather). They also have to state that the product (including its container) meets all other standards and requirements under the HEC Regulations.

AFB ON THE PAMPAS

It's midnight in December 1994, and I'm jammed into an over-full 747 bound for Buenos Aires (after an unsuccessful attempt by the airlines to bump me off the flight). I'm not sure about the meeting I'm supposed to attend, or the accommodation arrangements at the other end, and I don't speak any Spanish. I am starting to wonder just what I've let myself in for.

I have accepted an invitation to join Dr. Martha Gilliam from the USDA, and Dr. David De Jong from Brazil, as "overseas experts" at a 3 day workshop in Argentina where a management plan for AFB is to be developed. The control strategy is to be presented to a meeting of beekeepers, after formulation by a group of the country's industry leaders, scientists, extension workers and other government people.

Argentina has over 16,000 beekeepers who own more than 1,800,000 hives (that's 6 times bigger than the New Zealand industry). They export 16,000 T of honey each year, and their industry supports over 50,000 workers. But it turns out that all of this is at risk because of AFB.

American foulbrood first arrived in Argentina in 1989 and had gotten out of control. Now we all know that AFB is a serious disease. But how could it ruin so many operations and threaten the whole industry in less than 6 years? Easy... you throw massive amounts of poor quality or incorrect specification sulpha drugs at the problem, and when that doesn't work (because the Bacillus larvae develops resistance), you try oxytetracycline, with the same results.

This leads, of course, to drug residues in the honey, which affects exports, and causes public health authorities to insist on compulsory honey testing. Meanwhile, there are also massive problems caused by infected dead-out and abandoned hives being left exposed to neighbouring hives. Feed honey and combs waiting to be melted down are also left out in the open and are robbed by local bees.

I could hardly believe some of the things I saw in Argentina, or was told about. I was shown pictures of huge semi-trucks, owned by wax processing companies, which were stacked full of combs from hives with AFB. These trucks were not covered in any way, and were being robbed by bees whenever they stopped on the road. It seems the wax processors were travelling around the country

collecting dead-out hives from beekeepers and processing the wax back into foundation.

I saw many abandoned apiaries completely dead from AFB, and drums of extracted honey that were being fed ad lib to hives in the open. I was also driven past a beekeeper's yard where I saw massive stacks of combs and boxes, all exposed and full of robbing bees. I was told the combs were from AFB hives, but we didn't stop for a visit. The beekeeper had threatened to shoot any government person who set foot on his property. In Argentina, you take threats like that seriously!

Put all this together, and then add no legislation for AFB control and no formal inspection service, and it's easy to see how things in Argentina ended up the way they are. Concerned beekeepers, extension agents and apiculture researchers called the workshop and conference I attended in a last-ditch effort to get a "code of practice" adopted for AFB control. I was invited because they wanted to find out about New Zealand's AFB legislation, inspection programme, and (most of all) how beekeepers worked together to control AFB.

I took pride in being able to tell both the workshop participants and the beekeepers at the conference how the NBA worked, how beekeepers levied themselves to pay for a disease control programme, and how they also donated their time as voluntary inspectors. I'd have to say that my audiences were both incredulous and envious that there was so much co-operation within our industry to control AFB, and that beekeepers were so accepting of the need for control legislation. My hosts realised that our system wasn't perfect, but it was obvious to them that it was infinitely better than what they had in Argentina.

The AFB situation in Argentina is still bad, but the industry is surviving mainly because the beekeepers who aren't capable of controlling the disease are leaving the industry, and those that are left are working with university scientists to develop AFB-resistant strains of bees.

The Argentineans appear to be making great progress in this direction, and I was shown several very large apiaries that were clear of AFB even though they were surrounded by AFB-infected and abandoned hives. The beekeepers and scientists had been selecting and breeding for resistance over 2-3 years, and there appeared to be a high level of resistance, since no drugs were being fed.

At the conference, several beekeepers stood up and told heart-rending stories describing how AFB had nearly ruined them. One beekeeper had 400 hives, and the other over 1000, and they had infection rates of 50-80%. They were now struggling back by selecting and using resistant breeder queens, burning infected material, and by using drugs only on hives waiting for resistant queens. Their intent was not to use drugs at all.

The following is a translation of the general recommendations developed by the Argentinean participants at the workshop and adopted by the beekeepers' conference. It's interesting to see how similar they look to our own AFB control legislation and the proposed AFB PMS:

* Plan and implement a beekeeping extension programme

* Reduce the incidence of AFB through a national management programme

* Create an inspection service

* Implement an extension programme for the identification of honey bee diseases

and pests and for the promotion of appropriate methods for the prevention and control of AFB

* Create a national apiary register with the cooperation of beekeepers and government extension staff

* Develop legislation for controls over the movement of beehives and/or sale of nucs, colonies, bee packages and queens

* Implement controls over the movement of infected hives and/or second-hand hive equipment

* Restrict the importation of any bees, or appliances with which the same may have come into contact, from any place outside Argentina (except drone semen)

At the meeting, the Argentineans also developed a series of recommendations for beekeepers on disease management, prevention, and inspection.

- Murray Reid, AAO, HAMILTON

PROPOLIS BETTER THAN ASPIRIN

Research just completed at Oxford University in England suggests that propolis may be more effective than aspirin in preventing inflammation. Although further studies are to go ahead, the initial results are being hailed as good news for sufferers from arthritis, psoriasis and asthma.

Oxford scientists were asked to conduct tests to see if propolis could inhibit the production of leukatrines, the biochemicals responsible for many problems in both arthritis and asthma.

Preliminary results from Oxford show that propolis significantly inhibited the production of both prostaglandins (PG's) and leukotrienes (LT's), a group of compounds which have been implicated in a number of human diseases including those involving allergy or inflammation. As a comparison, aspirin would only inhibit PG production, and not LT production.

When propolis was used at its lowest concentration (0.01%), LT production was inhibited by nearly 40%. At higher concentrations (0.025 and 0.05%), production was inhibited by more than 95%. At all concentrations used in the tests, PG production was inhibited by at least 95%.

The research, which was conducted by Dr. Phillip Calder at Oxford's Department of Biochemistry, was funded not by government, but by two Yorkshiremen, Steve Ryan and Jim Fearnley. "We are beekeepers, not a pharmaceutical company", Steve said. "Customers had been telling us for years that propolis was helpful, especially for arthritis, so we thought we would put our money where our mouth is. It was a big step, but we feel it is a road we should take if health supplements like ours are to remain a credible alternative."

The beekeepers have now decided to fund further studies at Oxford to check out why propolis can stimulate the production of lymphocytes and boost the immune system. Steve Ryan and Jim Fearnley run one of England's biggest beekeeping enterprises, at Scarborough, North Yorkshire.

(Source: Rowntree's Media, UK; American Bee Journal, May 1996)

AFB vrs. TB

Did you know that as a percentage of gross returns, AFB costs the New Zealand beekeeping industry almost 3 times as much as TB costs the beef and deer industries? Here's the figures (1994):

AFB control/current programme -$120,000
(including NBA administration)

AFB control/beekeeper costs - $2.78 million
(average of minimum/maximum)

AFB control/total cost - $2.9 million

Beekeeping industry gross returns - $48.2 million

AFB control as % of gross returns - 6%

TB control/current programme - $28.93 million

(includes possum control)

TB control/farmer costs - $7.17 million

TB control/total cost - $36.1 million

Beef/deer industry gross returns - $1.693 billion

TB control as % of gross returns - 2.1%

Interestingly, however, in terms of percentage of gross returns, more than 8 times as much is spent on TB control (1.7%) as is spent on AFB control (0.2%). A substantial share of the possum control portion of the TB control programme is funded by government.

(Source: TB Pest Management Strategy promotional displays; AFB Pest Management Strategy proposal document)

WHAT'S NEW ON THE INTERNET

Now that we're in the quieter part of the beekeeping year, I thought it might be a good time to update readers on things of beekeeping interest on the Internet:

BEE-L - In the October 1995 BeeFax, we told you about E-mail and BEE-L, the beekeepers' bulletin board. BEE-L is a worldwide discussion group linking beekeepers, researchers and extension and regulatory personnel. When you subscribe, you receive every E-mail message sent to the bulletin board by any other subscriber in the world.

There's lots of interesting information on BEE-L, and you have an opportunity to ask your own questions and start discussion on your favourite beekeeping topics. Unfortunately, however, not everything that appears on BEE-L is either factually correct, or even all that friendly.

Recently, there has been a most disagreeable discussion regarding transshipment rights for New Zealand bees through Hawaii. The unfriendly E-mail seemed to come mostly from two American beekeepers. And whenever New Zealand subscribers

sought to counter the claims being made by offering facts and figures regarding New Zealand's bee disease status and disease control programmes, the resulting attacks bordered on the libelous.

That's one of the things you learn about the Internet. It's a refuge for free speech. And while protecting that freedom is important, especially in a world where not everyone has the privilege, it does mean that sometimes people will take unfair advantage, even in an area as innocuous as beekeeping. The good news, however, is that most BEE-L subscribers were appalled at the behaviour of the two American beekeepers, and a number told them so in no uncertain terms!

Service Providers - In the November 1995 BeeFax we discussed service providers, the businesses who provide you with access to the Internet. You connect to a service provider using a modem, a little box that links your computer via the phone line to the service provider's computer, and from there to the Internet.

Part of the problem in the past was that service providers were restricted to the main centres, so if people in rural areas wanted to access the Internet, they would have to pay for toll calls. In the last few months that has all changed, and there is now at least one provider (Voyager NZ LTD) you can access anywhere in New Zealand via a toll-free number. For more information, contact Voyager on 0800-888-258 (not their modem number!). We understand that both Telecom and Clear will be offering similar services in the near future.

Home Pages - In the February 1996 edition of BeeFax we mentioned that Voyager was offering low-cost World Wide Web (WWW) pages for subscribers. WWW pages (also called "home pages") are the information screens you access when you "surf" the Internet. The easiest way to do this is to use the search services which are included with the Internet access software the service provider gives you when you subscribe.

These search services are one of the most amazing aspects of the Internet. If you're interested in finding out information about honey, for example, you just type "honey" in the appropriate space, and in less than ten seconds, the program responds with a whole list of home pages with links to honey.

To actually view (called "visit") these home pages, you just point your mouse at the highlighted text in the list, and you are automatically connected with the computer, wherever it is in the world, which stores that home page. The home page itself can contain text, pictures, and even sound and moving pictures. It can also have a series of inter-connected pages, and links to other home pages elsewhere in the world which the developer of the home page believes may be of interest to the reader.

Last weekend I did a quick tour of beekeeping home pages. The trip wasn't exhaustive, and there are undoubtedly a number of pages I haven't found yet. There are also new ones coming out all the time. But anyway, here's what I found:

The Beeman - This is a page maintained by a Swedish beekeeper named Per-Olaf Gustafsson. No doubt some BeeFax readers know this guy, because when you look at his page you quickly realise he has spent a lot of time visiting beekeepers in New Zealand. His home page consists mostly of very good photos of New Zealand beekeeping taken in the period 1991-94, including a hive lifter, royal jelly production, queen rearing, an extractor at Arataki Honey, a beekeeping scene in Gore, and a picture of nodding thistle.

New Zealand Beekeeping - While on the subject of New Zealand beekeeping, I have to mention the New Zealand Beekeeping home page, which is maintained by Nick

Wallingford. I may be biased, but for my money this is easily the best beekeeping page on the Internet right now. It's chock-full of excellent information, including additional pages on manuka honey, the NBA, New Zealand's honey bee health status, and facts and figures on New Zealand beekeeping.

When you find home pages with this amount of good, factual material you begin to see the potential of the Internet as an information resource. Too many home pages on too many other topics either have a product to sell, or just scratch the surface of the subject. The New Zealand Beekeeping page does neither.

Bee Alert - If you think pollination is the only role bees can play in the environment, this home page may surprise you. Researchers at the University of Montana have found a whole new job for bees to do, helping to detect potential environmental hazards.

The Bee Alert home page describes the work of Jerry Bromenshenk and his Montana team, who are using honey bees as environmental bioassay agents. Bees are excellent at surveying what's going on in the environment because they visit so many plants.

Bromenshenk has found that by analysing the pollen and nectar the bees bring back, he can pick up traces of environmental pollutants far earlier than by any conventional method. Bee Alert also has a down-loadable software program (ie, you can copy it for free from the home page and use it on your computer) which plots honey bee colony development and honey production.

Bee's Eye - Ever wondered what that bee buzzing around your head is actually seeing? Visit this home page and find out. An animal physiologist has created a series of images the way we see them, and then the way we at least think the bees see them. Very interesting, and makes you wonder how they ever navigate through the world (the bees probably think the same thing about us!)

Thorne's Beekeeping Supplies - Beekeeping on the Internet isn't all research and information. There are also at least a couple commercial home pages. One of the nicest I've seen is the Thorne's Beekeeping Supplies home page. Thorne's is the leading beekeeping equipment manufacturer and retailer in the UK, and their page has pictures of their sales premises and a bit of background information. They also have a computer form you can fill out to get a copy of their catalogue. Believe it or not, I filled out this form on Saturday, June 22, and received my copy by post (on the other side of the world) on June 26. That's almost as fast as the Internet!

And what a catalogue it is. Thorne's claim it's the biggest colour beekeeping equipment catalogue in the world, and it certainly is a treasure trove of beekeeping paraphernalia. For a glimpse of what it contains, check out this month's Gadgets and Gismos (see below).

- Cliff Van Eaton, AAO, TAURANGA

BEES IN SPACE

Here's an amazing story that appeared awhile ago on BEE-L, the world beekeeping bulletin board. It was written by a scientist, so I've done a bit of translating:

Back in 1983, not long after the space shuttle flights started taking up experiments suggested by members of the public, someone sent up an empty fish tank containing flies, moths and honey bees. The idea was to see how they

performed in zero gravity.

What happened was that the flies crawled around, and then would jump and try to fly, which sent them spinning wildly out of control. The moths were a bit slower, but just as hopeless, flapping and blundering about.

The honey bees, however, after an initial period of similar clumsiness, figured out how to keep their wings folded and just push against the walls of the tank to get around.

According to the scientist, this seemed to be pretty convincing evidence that not all of honey bee behaviour is totally instinctual. He said he couldn't imagine anyone thinking that honey bees had managed long ago to evolve this type of physical behaviour in zero gravity. Unless, of course, (and I quote the scientist), "It was those fellers in the UFO's that brought them to earth in the first place!"

GADGETS AND GISMOS

E.H. Thorne Catalogue

I don't know about you, but I really enjoy looking at beekeeping equipment catalogues. A good catalogue, with illustrations or pictures, can be very educational, especially when you chance upon a piece of equipment or device you've never seen before. When that happens, it's time to get out your trusty ABC and XYZ of Bees, or some other good beekeeping book, and do a bit of research. Quite often you'll learn a new (at least new to you) management technique, or a different way of doing a routine job.

You can imagine my delight then, when the E.H. Thorne catalogue came in the mail (see the Internet article above). As I mentioned before, the colour photographs are superb, but what's really amazing is the amount of interesting bits of beekeeping gear it contains. And yes, you may need to get out your bee books, or talk to the old timers, to figure out some of the stuff, like the Snelgrove Board, or the dummy board, or a manipulation cloth. All interesting ideas, which have been around for years, but I don't recall ever seeing them all in a beekeeping catalogue before.

But of course this column is about worthwhile and interesting beekeeping gadgets, so what follows is a sample of some of the new things Thorne's have on offer. Quite a few of them would find a happy home in most New Zealand beekeepers' sheds:

Brush Uncapper - this is a new idea in uncappers which uses a high speed revolving brush with synthetic fibres, rather than steam knives. You simply hold the capped frame, and move it towards the brush until it makes contact. Then you pull the frame vertically upwards so that the cappings are brushed down onto the stainless steel mesh below. Thorne's says the machine is easy to clean and virtually maintenance-free. Uneven combs can be uncapped with ease by simply making another pass of the frame from end to end. They claim the brushes are hard-wearing, but will not damage either the frames or the beekeeper!

Liquid Level Sensor - this is a small plastic device which you just clip over the rim of your bucket or honey tank. The device is battery-powered and will emit a strong beep as soon as honey touches the sensor. Inexpensive at NZ$20, and a great idea for the smaller-scale beekeeper.

Hand-Held Honey Loosener - most beekeepers are now familiar with the big silver honey looseners for manuka honey. They're made in Scandinavia, and feature a whole series of little spring-loaded nylon needles that agitate the thixotropic manuka in the comb, allowing it to be more easily extracted. The only problem is that the loosener is quite expensive, and not for either the smaller-scale beekeeper or the larger beekeeper who just has the odd apiary producing a manuka crop.

Thorne's, however, may have found the answer. It's a hand-held version of the big silver loosener. It uses the same spring-loaded needles, but there aren't as many as on the bigger model, and they're mounted on a stainless steel rack with a handle. To use, you push the rack up and down over the face of the comb. Judging from the size, you'd need to make at least a half-dozen passes per side, but at NZ$155, it might be a more attractive alternative to the bigger (and far more expensive) table-mounted version.

Honey Homogeniser - I've never seen one of these before, either, but it looks like an excellent idea. Instead of melting out drums or buckets of honey, then holding the honey in a tank, adding starter and stirring it to get the honey to set, you just put your coarsely crystallised honey in the hopper and turn on the high-speed grinder. The machine shears the crystals and turns even notoriously coarse honeys like oilseed rape into a soft paste which will never set firmly again. It's a bit like a Patterson Creamer, but would appear to be able to handle solid honey straight from the barrel. Thorne's claim the machine produces a consistent creamed product from a range of different honey sources.

Pollen Moisture Meter - This is another device that's new to me, and is really a magic plastic box. You just scoop up your dried pollen into the trough at one end, hold the box upright to let the pollen slide into the measuring chamber, shake gently, and presto! you get your moisture reading. Pollen dried for human consumption should be dried to 11% moisture to keep it in perfect condition.

For a free catalogue, you can write to Thorne's at Beehive Works, Wragby, Lincoln, LN3 5LA, UK. Their fax is 0044 1673 857004, or you could E-mail them at thorne@dial.pipex.com. Oh, and by the way, I'm not getting paid anything by Thorne's to say all these nice things about them!

- Cliff Van Eaton, AAO, TAURANGA

JOKE OF THE MONTH

Question: Why do so few beekeepers smoke?

Answer: Because they've all seen the insides of a smoker!

BEEFAX

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ARE BEES ECO-FRIENDLY?

When I became interested in honey bees many years ago, the first thing that probably attracted me was the thought that beekeeping was one of the few agricultural activities which didn't harm the environment. Keeping bees didn't require you to cut down the bush, or degrade the soil, or fill the air and water with pesticides.

In fact, it was just the opposite, because in the process of producing honey, the bees pollinated plants, and this had a beneficial effect on the environment. In what other farming activity could it be said that your animals provided a positive value to the world far in excess of the crop you harvested from them?

It was therefore a bit of a revelation to me when I began reading about the plight of Australian beekeepers and their problems in gaining access to public lands. In the '80's, conservationists in that country pressed government decision-makers to pass laws to protect their unique native plants and animals, which for a long time had been under threat from the forces of development and land degradation. In particular, there were a number of species of mammals, birds and insects which relied on the pollen and nectar produced by Australia's array of flowering trees and shrubs.

The problem was that these trees and shrubs were more and more in short supply, and were now only found in restricted areas, often with large tracts of non-bush land in between. And of course there was also the unique situation that these nectar-producing species didn't always bloom with regularity. Eucalypts in particular often have a bloom interval of several years. The result is that beekeeping in Australia is highly migratory, with beekeepers shifting large numbers of hives into one place for a honey flow, and then moving them once the bloom has finished.

A particularly influential study was carried out in Australia in the mid-'80's which suggested that this type of honey production system, which beekeepers had always believed was just harvesting an over-production of nectar by the trees, was in fact resulting in inadequate amounts of nectar being available for native animals, some of which were endangered.

This led to restrictions being placed on beekeeper access to public lands, especially in national parks. Beekeepers in Australia have traditionally maintained their apiary sites on public land through a permit system, and these permits simply weren't being renewed.

The Australian beekeeping industry has been fighting this closed access policy ever since, and with some success. They have argued that the beekeeping industry is essential to the Australian economy, contributing some $10 billion in agricultural production per annum as a result of crop pollination. They have also argued that the scientific studies on which the public policy decisions are based are seriously flawed.

An article in a recent edition of BeeWorld discusses the problems being experienced in Australia, and also points out that the issue of honey bee - native bee competition is being studied worldwide. Results of the research so far are mixed, and while most show that there is a potential for competition between native and introduced bee species, none have shown a causal affect on reductions of native bee populations.

Part of the problem is that it is difficult to produce unequivocal results in an ecological field study, especially where other environmental factors (such as land management and pesticides) can have an overriding negative affect on the native bees.

In my own experience, I have found this to be especially true in Southeast Asia. Researchers have been contending for a decade or more that the introduction of Apis mellifera has resulted in a reduction in populations (both feral and domestic) of the native honey producing hive bee, Apis cerana. The often unspoken assumption is that A. mellifera is somehow out-competing A. cerana.

I have yet to see any compelling scientific studies which bear this assumption out, and I believe that the reduction of A. cerana in that part of the world is much more a matter of destruction of habitat (for feral colonies), increased use of pesticides, and the move by beekeepers to the more productive A. mellifera. Nevertheless, at least one regional beekeeping organisation in Asia has called for the exclusion of A. mellifera from areas where A. cerana beekeeping is prevalent.

Closer to home, an important investigation into the effects of honey bees on the conservation values of natural areas has recently been completed here in New Zealand. The study, by Dr. Henrik Moller and Vivian Butz Huryn of the University of Otago, looked at the potential effects of A. mellifera on native wildlife (esp. birds and insects) through competition for honeydew and nectar, and on native plants and weeds (through pollination). They also looked at the effects of wasps (Vespula sp.) foraging on honeydew in relation to native wildlife.

Moller and Butz Huryn found that there was no quantified evidence for New Zealand native plants being positively or negatively influenced by honey bee foraging, nor was there evidence to indicate that a lack of honey bee pollination would limit introduced weed populations.

They also found that while the presence of wasps and honey bees had a major effect on reducing honeydew levels in South Island beech forests below a point where there was a negative effect on bird foraging, when the wasp foraging component was excluded, the intake of honeydew by honey bee colonies was much less than that required to alter the foraging behaviour of honeyeater birds. This is the case, the authors believe, everywhere in the South Island except the West Coast, where honeydew scale insects are low in numbers.

The authors also carried out an extensive review of overseas studies on the effects of honey bees on native species and conservation values. They concluded that the existing evidence was ambiguous or largely lacking, especially in relation to weed and endangered plant species. As far as animals are concerned, while the foraging behaviour and abundance on flowers of some native animals are altered in the presence of honey bees, "not one study has shown detrimental impacts of honey bees on population abundances of any native animals".

Moller and Butz Huryn believe that the ecological impact of honey bees in New

Zealand native areas is "likely to be minute and undetectable compared to the effects of the newly introduced and super-abundant wasps, and the ongoing community changes imposed by possums and other introduced browsers." They also state that the number of beekeepers involved and the number of their hives on DoC land is small, with public nuisance and reserve damage from beekeeping negligible. They conclude their report by saying, "accordingly we see no reason to restrict beekeeping in conservation areas beyond the current flexible and pragmatic measures."

(Sources: BeeWorld (1996), issue 1, pp. 26-44; Beekeeping and Conservation Values of Protected Natural Areas, University of Otago Wildlife Management Report No. 51)

- Cliff Van Eaton, AAO, TAURANGA

LAB PASSES TEST

As readers of BeeFax know, MAF Quality Management (MQM) runs an exotic bee disease surveillance programme that is funded by the government. Part of this programme is the sampling of apiaries for exotic bee mites. Each year MQM inspects and samples 500 apiaries around New Zealand in areas with a high risk of being infected with an exotic disease. A further 500 samples are submitted by beekeepers as part of the export certification of live bees. MQM also carries out investigations of suspect cases of exotic mites, EFB and Africanised honey bees, either detected during MQM's normal inspection programmes or when reported by beekeepers.

As part of this surveillance system, MQM has trained people in the animal health laboratories who process the surveillance samples. One such group is in the parasitology section of the Invermay Laboratory, where Melanie Taylor heads the team. Melanie has become well known to beekeepers involved in the live bee export trade because she is responsible for processing their surveillance samples. Melanie does a great job, and usually manages to keep an even keel. Recently, however, the Apiculture Section did manage to raise Melanie's blood pressure somewhat, when it carried out a test of her team's laboratory procedures.

Murray Reid, National Manager of Apiculture, salted two samples of uninfected bees with bees containing tracheal mites (Acarapis woodi). He then submitted the samples to the Invermay laboratory as routine surveillance samples. Tracheal mites are microscopic in size, and spend most of their lives in the breathing tubes of adult bees. To diagnose them, a lab technician has to dissect the bees, remove their tracheal tubes, and then look at them under the microscope. It's painstaking work, and when the bees are lightly infected, actually finding some mites is like looking for a needle in a haystack.

Needless to say, Melanie and the lab didn't know that a test was being conducted, or even what type of mite was in the samples. Nevertheless, we are very pleased to report that tracheal mites in both salted samples were found by the Invermay group, and that the correct EDPR reporting procedures were followed.

We managed to string Melanie along for awhile, but finally let her off the hook. She seemed to have remained calm, but she tells us now that she couldn't manage to sleep that night. It would appear that beekeepers aren't the only ones who worry about the consequences of bee diseases. Congratulations to Melanie and her team at Invermay for a job well done!

- David McMillan, AAO, INVERMAY

DANISH BIOGRO CONTRACT

Waitaki Apiaries, the largest organic honey producer in New Zealand, recently won a contract to supply 200 tonnes of BioGro bulk honey to an importer in Denmark. The honey will be distributed throughout Scandinavia.

Waitaki is owned and operated by Peter Irving and Kate White, and is located at Kurow in North Otago. According to Peter, "in Denmark the government is actively encouraging consumption of organically grown foodstuffs. As a result, by the year 2000, 25% of all food consumed there is expected to be organically produced."

The honey produced by Waitaki is BioGro certified, an organic standard well respected in Europe and essential for selling honey there which is labelled as being organically produced. To meet the certification, low levels of chemical residue have to be maintained within a 5km radius of all production apiaries.

Farmers who have Waitaki apiaries on their properties have to sign declarations outlining their present and predicted chemical use. Strict records need to be kept, and if quality problems arise, each batch of honey can be traced to any of the 3000 hives spread throughout the Waitaki and Hakataramea Valley.

Meeting and maintaining the BioGro standard means additional work, but the reward is higher prices. In Denmark, jars of organic honey sell for NZ$5.20, compared to NZ$3.11for standard honey.

Waitaki's honey is shipped in 200 litre drums to central Jutland, in Denmark, where it is packed into 250gm glass jars for retail outlets. Although packing could have been done here in New Zealand, White says that because organic honey must be packed in glass, the extra costs of machinery, freight charges, and the possibility of breakages on the sea voyage does not make packing in NZ a viable option.

Waitaki's main competitors come from Argentina and Canada. However, Irving says beekeepers there have to contend with more bee disease problems which makes maintaining the required BioGro standards more difficult.

(Source: Export News, June 24, 1996)

THE HONEY BEE AS A DOMESTIC INSECT

Ironically at a time when questions are being raised about the effects of honey bees in the environment (see lead article above), the population of honey bees in North America continues to be under threat. And with the decline may come some unwelcome effects on both home gardens and wilderness areas.

Experts estimate that as a result of Varroa and Tracheal mites, and a long, cold winter, more than 90 percent of wild colonies have been wiped out in the US, along with a large number of those tended by beekeepers.

"It's devastated the population of unmanaged bees that are in hollow trees and old buildings," said Hachiro Shimanuki of the US Department of Agriculture's bee research laboratory in Beltsville, Maryland. Shimanuki has estimated that this year's weather/parasite catastrophe has also killed off 30% of existing beehives, but he emphasizes that the number varies widely from one US state to

the next.

In Maine, state apiary inspectors reported losing 80% of kept bees. In Wisconsin, beekeepers lost 67% of their stock. New York estimates losing 60 to 70% of its domesticated bees.

According to reports, anyone who depends on wild bees for pollination is in for a particularly rough summer. Commentators say that gardeners and small farmers who can't afford to rent colonies from beekeepers won't see very much in the way of cucumbers, melons, apples, blueberries and the dozens of other crops that won't produce without bees.

"The people who probably will suffer will be backyard types," said Troy Fore, executive secretary of the American Beekeeping Federation and a professional beekeeper in Jesup, Georgia. "They are people who don't go to the trouble of renting bees."

According to Fore, in the past many farmers relied on wild bees to pollinate their crops. Although these aren't wild in the truest sense (they're really just domesticated colonies that have escaped human domination) they are wild in the sense that they don't require tending. But as those populations have declined in recent years, bee rental has become a sizeable industry. Beekeepers make NZ$69 million annually by renting their hives to farmers, who rely on bees to produce an estimated NZ$14.5 billion worth of crops.

While the mites have been devastating, their effects this year have been especially bad because of the weather. Cold winters can sometimes wipe out beehives simply because the bees' body heat can't keep the hives warm enough. So if a hive's population is already reduced by mite infestation, it's that much more susceptible to the cold. "You don't have the critical mass to keep the hive warm," Shimanuki said.

Cool, rainy weather in the US this spring just made matters worse by delaying the blooming of plants, he added. No blooms meant no nectar, so bees had to live on honey for a few weeks longer than they normally would. Many hives probably just ran out, Shimanuki said.

Bee experts say they can't predict how the decline in the wild bee population will affect wild plants and the animals that eat them. But they guess that in places such as New York and New Jersey, which may have no wild honey bees left, there aren't going to be too many wild berries this year.

The continued decline in feral Apis mellifera colonies in areas of Europe and North America, where the Varroa mite has become endemic, has lead one observer to suggest that we may be seeing the final domestication of the honey bee. Tom Stanford, from the University of Florida, says that as a result of Varroa infestations, two kinds of beekeepers can now be identified: those with experience "before Varroa," and those who began apiculture "after Varroa." Persons in the latter category cannot appreciate the comparatively easy-going beekeeping that was possible before the mite arrived.

According to Stanford, this state of affairs is also being reflected in the bees themselves. "No longer able to exist in large numbers in the wild, the insects are being pushed toward a greater reliance on humans that can only be called 'domestication'."

Stanford quotes a Dr. D.F. Morey, who has studied the domestication of various animals. "Some time in the past 12,000 or so years, most of humankind began to experience a profound shift in life style. Stone Age hunters and gatherers of

wild foodstuffs started to cultivate plants and raise animals for their own use. "

The dog is likely the first domestic animal, Dr. Morey says, and it provides some insight into how it has changed to adapt to living with humans. Dr. Morey also discusses a range of other animals which have been domesticated, but significantly no insect appears. According to Sanford, "two possible candidates would be the silk worm and honey bee. Most beekeepers know the history of the latter, a creature that historically resisted domestication at every turn and to which humans had to adapt. As far as we know, few changes occurred in either honey bee structure or behaviour to accommodate to humans in the way that happened with the domestic dog. This is in spite of the fact that both organisms have been associated with humans for almost as long".

Stanford believes, however, that "the coming of Varroa may signal an end to this historic independence of honey bees from humans. Wild colonies are declining and managed ones need beekeepers more than ever before to survive the devastating effects of the mite. And unlike with early humans domesticating the dog, we can determine intent. Beekeepers could simply let all colonies infested with Varroa go without treatment. It would take a great many years, but in the end a mite resistant or mite tolerant bee would emerge. Instead, humans keep honey bee colonies alive by chemical intervention because they are valuable to us for a number of reasons, a clear case of willful domestication."

(Sources: BEE-L Bulletin Board; APIS newsletter, April 1996)

BEEKEEPING IN VIETNAM

In 1994, Stephen Ogden and I carried out a three week Asia Development Assistance Fund (ADAF) contract in Vietnam. We visited beekeepers, bee products companies and government officials in both the south and north of the country, and learned that while beekeeping there is obviously much different than in this part of the world, Vietnamese and New Zealand beekeepers actually have a lot in common.

To begin with, the beekeeping season in Vietnam follows a similar calendar to our own, which is surprising when you consider that Vietnam is in a subtropical region in the Northern Hemisphere. The main factor determining when the honey flow and dearth periods occur in Vietnam, however, isn't the change in day length (and summer and winter), but when the rainy and dry seasons take place.

Beekeepers in Vietnam start their preparations for honey production at about the same time that we do, in September, once the rainy season has finished and pollen supplies become available. Important pollen sources in the country include cultivated plants like tea, coffee and maize, as well as the weed mimosa, commonly sold in New Zealand plant shops as the "sensitive plant".

Vietnamese Apis mellifera beekeepers are almost without exception commercial beekeepers, and they tend to run outfits of between 400 and 600 hives. They are also very good queen rearers. They need to be, since their management system requires them to split their hives 6 to 8 times leading up to the main honey flows which occur in November through March. Hive numbers in Vietnam at this time of the year reach 60,000 to 70,000 colonies.

Vietnamese beekeepers are also very migratory, and shift their hives up to 6 times each year, chasing honey and pollen flows. Vietnam has a highly intensive agricultural system, and beekeepers there must rely on plantations of cultivated crops for their honey production, rather than pasture and weed

species. Main honey sources include the rubber tree, longan (which produces a fruit like a small lichee), and rambutan (which produces a beautiful tasting fruit with an unusual red skin covered in long, soft spines).

Like New Zealand beekeepers, the Vietnamese also tend to average about 30kg per hive. In this case, though, the hives are really all the splits they have made during the September-November period, and the honey doesn't just come from the surplus each hives produces. Vietnamese beekeepers reduce their hive numbers by 7 to 8 times once the rainy season begins in May. They extract out all the honey from the hives not chosen to be carried through, and actually melt out all the comb from these hives as well, since wax moth is such a problem.

Most Vietnamese beekeepers run one super colonies of 12 frames, rather than using honey boxes, and extract much of their honey in the orchards as the crop is produced. And just like New Zealand beekeepers, the Vietnamese tend to feed a lot of sugar to their hives during periods of dearth. The only difference is that because of a protective import tariff in their country, sugar retails at between NZ$760 (raw) and $930 (refined) per tonne. Honey prices, on the other hand, average 98 cents to $1.33NZ per kg.

One of the advantages of the reduction-multiplication and comb melt-out systems Vietnamese beekeepers practice is that it tends to keep bee diseases at bay. Vietnam's native honey bee species include Apis cerana, A. dorsata and A. florea, and so A. mellifera beekeepers have to cope with both Varroa (which is an original parasite of A. cerana) and Tropilaelaps (which comes from A. dorsata), the two most devastating bee mites in the world.

The Vietnamese have developed very good non-chemical control methods for both pests, and the rapid splitting and then hive culling that goes on every year probably means that the populations of both mites just can't keep up. Vietnamese honey bees also don't seem to have any American foulbrood or chalkbrood, although both European foulbrood and sacbrood are often found in A. cerana hives.

The other interesting thing Stephen and I found during our visit was that Vietnamese beekeepers have an excellent beekeeping journal. The publication, called Nganh Ong, comes out quarterly, and contains excellent research and practical articles from Vietnam, as well as translated articles reprinted from overseas. Everywhere we went in Vietnam, we were amazed at the interest and understanding beekeepers had about New Zealand beekeeping. Then when we visited the editorial offices of Nganh Ong in Hanoi, the penny finally dropped. The journal had recently published a translated version of Andrew Matheson's article on New Zealand beekeeping, which originally appeared in Bee World!

[The third Asian Apiculture Association Conference will be held in Hanoi, Vietnam, October 6-10, 1996. New Zealand is a member of the association.]

- Cliff Van Eaton, AAO, TAURANGA

BEE RESEARCH BONANZA

It wasn't so long ago that honey bee research was considered a poor relation in New Zealand science. I remember analysing the research budget figures about 10 years ago and was amazed to find that more money was being spent on studying bumblebees in this country than on honey bees and beekeeping.

Now, of course, all that has changed. HortResearch has two honey bee research groups, one headed by Dr. Mark Goodwin at Ruakura, and the other headed by Dr.

Louise Malone at Mt. Albert. And then there is the excellent work on honey and other bee products being carried out by Dr. Peter Molan and his team at Waikato University.

I was fortunate enough to hear about some of the work being carried out at these centres when I attended a research meeting at Palmerston North just before this year's NBA Conference. The meeting is an annual affair, and is organised by Mark Goodwin. According to Mark, the meeting gives scientists involved in bee research a chance to present their results, and discuss their work with other scientists on an informal basis. It's sort of a discussion group for researchers.

It was evident from the work presented at that meeting that we are now experiencing something of a bonanza of bee research in New Zealand. What follows are some very brief descriptions of the wide variety of projects that are under way:

Assessing Kiwifruit Pollination During Flowering - this work is being carried out by Mark and his team at Ruakura. They are investigating the perennial question that most pollination beekeepers hear from growers: "How do I know how my pollination is going?" In the past, the only really good way to assess kiwifruit pollination was to look at seed counts in fruit at packing time. Mark and his team, however, are trying to develop simple methods growers and beekeepers can use to predict seed count (and hopefully fruit size) based on bee counts in the orchards.

Testing Honey for Bacillus larvae Spores - Heather Haine reported on this work, which is also being carried out at Ruakura. Many of you will know Heather, who is the senior technician in Mark's team. The work comes from a request made by the NBA's Disease Control Committee. The Committee wanted to know how predictive honey testing is in determining AFB problems in beekeeping outfits. They believe such testing could be an important cost-saving tool which might be of use in the AFB Pest Management Strategy. Part of the work involved testing a range of honeys, including manuka, to see if any antibacterial properties would reduce spore germination. They found much to their surprise that while all honey tupes enhanced germination, clover had the lowest response. Heather also reported that the predictability of honey testing is so far not as good as for adult bees. However, they have now developed a more sensitive plating technique for growing out the spores contained in honey. Hopefully they will be able to carry out another set of trials this year to test the new technique.

Honey Bees as A Bio-Control Agent - Janet Yu, a horticulture scientist at Ruakura, is carrying out some really interesting work using bees to help control Fire Blight, a serious disease of fruit trees. Fire Blight is caused by a bacteria which gains access to the tree via the stigmas of the flower. It then passes through the branches down into the trunk, and can defoliate and even kill the tree. Janet is taking advantage of the hard work that bees do in visiting flowers during pollination. She is using pollen inserts to put biological control agent bacteria on the bees as they leave the hive. The bees then deposit some of this agent on the stigmas of the flowers, precisely at the same point where the Fire Blight bacteria is likely to cause harm. While using bees to control Fire Blight has received publicity elsewhere in the world, I understand that Janet is the first person to actually carry out successful field trials.

PCR for EFB - Robert Rice reported on this work, which is actually being conducted by a scientist in Wales, on contract to the MAF Regulatory Authority. The PCR (Polymerase Chain Reaction) technique was explained in an excellent article by Robert in a previous edition of Bee Fax. The PCR will give us a far

more sensitive test for Melissococcus pluton, the causative agent of EFB. Currently we have to rely on microscopic diagnosis and time-consuming culture tests. Preliminary work has now been completed, and further trials are likely to be run in New Zealand in the near future.

Genetic Variability in Nosema - Dr. Heather Gatehouse, a molecular biologist at Hort Research in Palmerston North, is using DNA sequencing to try to determine if there are different strains or types of Nosema apis. Nosema is an adult bee disease of major economic importance, although because we generally don't recognise the symptoms, most beekeepers aren't aware of it's negative effects, such as loss of honey crop and reduced pollen gathering. Heather is using similar scientific techniques to the DNA finger-printing made famous in courtroom dramas to investigate the DNA variability of the nosema protozoan.

Genetically Engineered Plants and Bees - Dr. Louise Malone and her team at Mt. Albert are investigating an area which we are all going to hear more about in the future - "transgenic plants". Transgenic plants are plants which have had a gene or genes from another plant or animal "spliced" into their DNA. The genes are chosen because they produce a desired trait in the original plant or animal, such as resistance to a particular disease. When spliced into the DNA of the transgenic plant, the plant then also has that disease resistance. A number of transgenic plants are being developed around the world, and one (a tomato) has already been released commercially. Louise and her team are doing ground-breaking research to determine whether several of the common disease resistance genes might have an adverse affect on bees when collecting nectar and/or pollen from the transgenic plants. To do this, they are feeding bees with the substances these plants would produce if they had these genes.

- Cliff Van Eaton, AAO, TAURANGA

BEEFAX

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NORTH AMERICAN OBSERVATIONS

Recently I visited North America to attend a family reunion. The trip was meant to be nothing more than a holiday, but like the rest of us, I couldn't seem to stay away from bees and beekeeping (just ask my wife!). Here are a few of my observations from that trip:

Mites and Hive Losses - the reports we have been passing on to BeeFax readers about the big hive losses in North America were certainly borne out by the conversations I had with beekeepers. There were large losses in the Canadian prairies, and throughout the northern US. The prolonged winter (one of the longest and coldest in many years) certainly played its part, but I had also assumed that the varroa mite was a main culprit.

However, according to a friend who has investigated these losses, the real villain seems to be the tracheal mite. His evidence is the fact that losses were very high in a number of areas of Canada where varroa either hasn't been found or isn't widespread. He also says that beekeepers seem to be more concerned about varroa than the tracheal mite, and are not treating their hives for both mites.

Honey Prices Keep Going Up - one of the consequences of the reduction in hive numbers is that honey prices in North America are continuing to rise. One area I am familiar with is the Okanagan Valley in south central British Columbia. Beekeepers there were fortunate enough to be in the midst of one of the best honey flows in memory, with many hives stacked 6 supers high. Beekeepers were busy extracting a fine crop of sweet clover honey, and putting supers back on to get a crop of knapweed (star thistle).

They were also being called by honey buyers, who were offering as much as CDN$1.50/lb. (NZ$3.47/kg) for their crop. These beekeepers normally sell their honey in retail packs at fruit stands throughout the valley, but it looks like this year they may decide to just put it into drums and ship it away.

Supermarket Sales - the increase in the bulk price seemed to be having a destabilising effect on supermarket sales, with some retail packs (probably last year's crop) selling at almost twice the price as others. One 1kg pack on offer was selling for CDN$6.99 (NZ$7.35), while another was marked at CDN$3.99 (NZ$4.20). There were actually several 500g packs which were selling at the same CDN$3.99 price.

Table grade clover is the predominate honey type sold in supermarkets, and it is traditionally sold in liquid form, although judging from what was on offer, creamed honey seems to be gaining in popularity. Honey mixed with margarine (called "honey butter") and honey flavoured with cinnamon are also good sellers.

The average price for 500g clover on the shelves I looked at was CDN$3.31 (NZ$3.48) for liquid, and CDN$3.46(NZ$3.64) for creamed. This compares to our May

1996 BeeFax survey of New Zealand retail prices of NZ$2.48 for clover blend, $2.63 for bush blend, and $4.56 for manuka.

Lack of Sales Innovation - the other thing that was obvious from looking at honey on supermarket shelves in both Canada and the US was the lack of sales innovation compared to New Zealand. Honey labels ranged from the bland to the old-fashioned. There was also a preponderance of large honey packers turning out "low cost" and "budget" brands, either of their own design or on behalf of the supermarket chain. As well, there was no attempt to differentiate honey by floral source.

Honey also seemed to be losing the race to other table spreads. In one very big Safeway store I visited, honey had 7m of shelf space. Jam and peanut butter, on the other hand, had 28m. In another up-market store in Seattle the situation was even worse. Honey had a meagre 2m of space, tucked up in one corner of an isle, while jam and peanut butter had about 20m.

Other Food Uses - the honey consumption story wasn't all grim, however. Honey was being used in a whole host of foods, ranging from breakfast cereals and bread, to popcorn and ice cream. And of course there were the honey beers, which we reported on in the February issue of BeeFax. Micro-breweries are all the rage in the US, and I visited one pub which claimed to have 75 boutique brews on tap. At least 5 of them were advertised as containing honey. Very good indeed, and I had to work especially hard trying to decide which was the best!

Bill's Honey (and Canoe) Ranch - I was also fortunate to visit a very innovative beekeeper in British Columbia by the name of Bill Ruzicka. Bill runs a 600 hive pollination and bee breeding operation in the Okanagan Valley, and he is probably one of the most successful beekeepers on an income per hive basis in that part of Canada.

Bill seems to do a lot a things quite differently from other beekeepers. For instance, he has found that he can successful release virgin queens into his nucleus colonies. His secret is the use of 3 mini marshmallows (I'm not kidding) in the candy portion of the introduction cage.

Bill also has a two-man hive lifter which is simplicity itself, and has developed a neat way of feeding out hives. He uses strongly built 200 litre barrels, and then once they are filled with syrup he pressurizes them to 10psi with a compressor. He gets the last syrup out of the barrels by running a line off the pollution control valve of his truck.

Bill is looking for someone from New Zealand to help out in his business, at least from the middle of May to the middle of July. I understand that he is offering room and board, and there is the added incentive of some of the best canoeing in Canada (Bill also runs a canoe outfitting business, and his ability to stand a canoe up on its nose in strong rapids is something that has to be seen to be believed!). You can read his letter in the August New Zealand Beekeeper, or contact me here in Tauranga for further details.

- Cliff Van Eaton, AAO, TAURANGA

NZ BEESWAX MORE VALUABLE

Much was said at last year's Apimondia Conference about varroa and its control. Many research reports stressed the problems of having so few chemicals to deal with the mite, while at the same time warning of the risks of the chemicals

leading to the development of resistent "super" mites. Concern has also been expressed for several years now about the miticide residue problem in honey, and reports have surfaced from time to time of unsaleable lines of honey with high miticide residues, usually traceable to the improper use of the treatment.

In the last twelve months a new concern has appeared - miticide residues in beeswax. It would appear that fluvalinate (Apistan), a widely used contact miticide, gets chemically bonded to beeswax in the hive. So far no one has been able to clean the fluvalinate out during processing without damaging the wax.

Where this wax is used for polish or cosmetics it may not matter too much. But what happens when it is converted into foundation? Each cycle through the hive will actually increase the fluvalinate concentration in the wax!

Two likely consequences of this have been identified so far. The first is that varroa may develop resistance to fluvalinate. Dr. Rosenkranz has recently reported finding fluvalinate residue levels of 2 - 20mg/kg in European wax. He also believes that these sub-lethal levels could quickly produce fluvalinate tolerance in varroa. Apparently resistance to the miticide is already developing in parts of Italy.

The other likely consequence is that if levels of fluvalinate residues continue to increase as wax is further recycled through foundation, it is feared that the residue may become lethal (or at least damaging) to bees.

By now it should be obvious where I am heading in this article. As long as New Zealand can maintain its varroa-free status, and avoid the use of miticides, then our beeswax should attract premium prices.

At the very least we should be looking hard at our beeswax exports, both raw and in foundation form, and pointing out to our buyers the fact that it is " miticide-free" and therefore worth (lots?) more than high residue wax from varroa-infested countries. How about it, beeswax exporters? What sort of premium can you extract? 100%, 200%?

(Source: Dr Peter Rozenkranz, Hohenheim University reported to the Fifth Ibero Latin American Beekeeping Congress at Mercedes, Uruguay in June 1996. Quoted in Apis, August 1996.)

- Ted Roberts, AAO, PALMERSTON NORTH

HEARD AT CONFERENCE

These quotable quotes have become a tradition at beekeepers' conferences. They' re always fun, and sometimes also contain more than a little bit of wisdom. Here's our collection from this year's Wanganui conference: "Ride the crest of the wave. Don't wait until it's passed and then say, that was a good idea." - Dr. Peter Molan

"Prejudice is a great time-saver. It allows you to form opinions without having to take time to gather any facts."

"Some people use statistics like a drunk uses a lamp post...for support, rather than illumination."

"We are now going to stop the conference proceedings so that the Minister can address us. We wouldn't want a Minister of the Crown to be kept waiting the

way our industry has been kept waiting for the PMS!"

Minister - "Can everyone hear me at the back?"

Voice from the back - "Yes, I can hear you. But I'm quite happy to move somewhere where I can't!"

"Beekeepers need to wake up their ideas. You need the NBA to represent you in dealing with government, because no one in government is going to protect you in the new MMP environment." - John Falloon

Minister - "If I explain it maybe you'll tell me if I'm wrong."

Voice from the back - "You're wrong".

NBA delegate - "Customs is really getting slack. When we came back from Aussie we didn't even get our passports stamped at the Palmerston North airport".

Voice from the back - "Then you're not here!"

WHAT'S IN PROPOLIS?

Everyone in the beekeeping industry knows about propolis. The sticky substance we get on our hands and clothes is really tree resin that bees collect and place throughout their hive. But what is really in propolis? Research being conducted by the New Zealand Institute for Industrial Research and Development, under the guidance of Dr. Ken Markham, has been looking into this question.

Dr. Markham is particularly interested in New Zealand propolis, because although propolis has been studied overseas, very little is known about our local product. New Zealand has a unique and isolated floral heritage, which has been complemented over time by the introduction of exotic species such as popular, pine, willow, and oak. These species originate in a wide range of areas of the world, including North America, Europe and Asia.

Propolis is waxy, resinous, and contains water, inorganics, phenolics and essential oils. But there's more. The organic constituents of propolis can also be removed and studied. Dr. Markham's group has unraveled some of the mysteries of the New Zealand propolis via the use of two scientific procedures known as HPLC and GS-mass spectrometry. These procedures allow them to break the ethanol-soluble part of the propolis down into its constituents and identify them. The ethanol-extracted part is what's used in the manufacture of propolis products, and is known as the tincture. Within this tincture there are two main groups of compounds, the flavonoid component and the cinnamic acid component.

The flavonoid constituents of New Zealand propolis are dominated by pinocembrin and pinobanksin (also known as dihydroflavonoids) which make up 70% of the flavonoids in the samples tested. In comparison, a Brazilian propolis sample tested had only 50% dihydroflavonoids. Other flavonoids found are chrysin and galangin and their derivatives. There is also 1,1-dimethylallycaffeic acid, which is an interesting product because it is associated with the contact allergies experienced by some beekeepers.

Flavonoids are important because they are believed to be responsible for most of the biological activities identified with propolis. Dihydroflavonoids have been associated with antimicrobial activity as well as other health attributes.

Propolis also contains non-flavonoid components. These are dominated by amines. Amines are organic derivatives of ammonia and are noted for their physiological effects. Many drugs and medicines are ammonia derivates.

What is interesting about the non-flavonoid components is that they are close in type and quantity to those found in the Chinese and South American propolis samples which have been studied. As well, the New Zealand propolis appears to be very similar to propolis found in other temperate climate areas such as Europe and North America. This has led to speculation that our bees may be gathering propolis from exotics species, rather than indigenous New Zealand flora. However, our native trees and shrubs should not be ruled out as a possible source.

(Source: Markham K. R., et al (1996) HPLC and GC-MS identification of the major organic constituents in New Zealand propolis. Phytochemistry 42(1): 205-211)

- James Driscoll, AAO, PALMERSTON NORTH

POLLEN PRODUCTION

In recent beekeeper discussion groups held throughout Otago and Southland, we have been discussing pollen production. What follows is a brief summary of those discussions:

What is Pollen? - Pollen is the male reproductive cell produced by the flower for sexual reproduction. Pollen is a source of protein, fat, vitamins and minerals to the bee, and is essential for bee growth and development.

Trap Types - Pollen is collected by beekeepers by placing a pollen trap on the hive. When the bees go through the pollen trap they pass thought a narrow opening or grid which dislodges the pollen from the pollen baskets on the bees' hind legs. There are two basic types of trap - the under-hive trap and the entrance trap. Both have their advantages and disadvantages.

Some of the advantages of the under-hive trap are:

* protection from the weather;
* easily fitted;
* are within the normal hive dimensions.

Some of the disadvantages are:

* they collect a lot of hive debris;
* you need to lift the boxes off to fit/remove the trap.

Some of the advantages of the entrance trap are:

* they don't collect much hive debris;
* you don't have to lift the boxes off to fit/remove the trap.

Disadvantages include:

* difficult to fit;
* not as protected from the weather;
* need to be removed when moving the hives;
* generally have a smaller capacity.

Regardless of which type of pollen trap you use, the rest of the hive must be bee tight. If it is not, bees will use the alternative entrance rather than going through the pollen traps. Traps come in a variety of types and sizes, and the trap that you use should be what works for you and your management system.

When To Trap - There are two main pollen flows - one in the spring and the other in the autumn. It is debatable whether traps should be engaged during the honey flow. The general consensus seems to be no. Pollen traps should be engaged from mid-September to early December, and from late January to mid-March.

When Not To Trap Pollen - Pollen should not be collected in a pollen-deficient area, since the hives will need all the pollen that they can collect for themselves. An expanding colony should have two to three full depth frame equivalents of pollen before the trap is engaged. It is advisable to wait until there are four frames of brood and the hive is increasing in strength before engaging traps in the spring. If a hive is not collecting much pollen, the trap should be removed and put on another colony. As well, not all hives are good pollen gatherers.

Traps should not be engaged while colonies are being united with paper, or when putting out freshly extracted honey combs, or when feeding sugar, since the traps will collect the paper, wax and sugar which then will need to be separated from the pollen. Traps should be disengaged when putting out queen cells, and in autumn before drones are expelled. Effects On The Hive - The reported effects of pollen trapping on hives are often contradictory. This is because the effects on the hives depend on four main factors:-

* availability of pollen in your area;
* season (eg weather);
* genetics of the bees;
* management techniques.

It is, however, generally accepted that pollen trapping causes early supersedure in older queens, so traps should only be fitted to hives with younger queens.

Remember that a colony requires 15-20kg of pollen per year for its own use to be strong and healthy. It is advisable to spell hives on a regular basis, especially if pollen production is dropping.

Disease - Bee collected pollen can carry bee diseases. If pollen is going to be used to feed back to hives, the hives should be thoroughly checked for AFB and the pollen identified in storage in case the disease turns up after the pollen has been collected.

Harvesting - Pollen will become damp, and start to grow mould and rot after about four to five days, especially in wetter weather. Pollen should therefore be collected every two to five days. For this reason it is important to choose sites which are close to your home base so that you do not have to do excessive travelling when collecting your pollen. It is important to choose sites that are not damp and wet. Wax moth larvae feed on pollen and the pollen you are collecting will contain wax moths eggs. Therefore the pollen must be treated. The easiest way to do this is by freezing. This is achieved by placing the pollen directly into the freezer after collection for a couple of days. It is also import to handle pollen in such away that it does not become reinfected.

Drying - Fresh pollen should be dried as soon as possible after freezing to

reduce shattering of pellets. Fresh pollen contains over 20% water, and buyers require it to be between 8 to 10%. Pollen is easily burnt and should therefore not be heated over 50oC. A temperature of 45oC is considered ideal for drying.

Cleaning Pollen - Cleaning cannot occur until after drying, since undried pollen is too fragile. Small quantities of pollen can be sorted by hand or dropped through a gentle air current. Large quantities will need to be processed in a commercial seed cleaning machine. Drying and cleaned pollen results in about a 20% loss in weight.

Storage - Pollen stored for human consumption should be stored in airtight containers, either in the freezer or at room temperature. Pollen that has been dried retains its nutritional value for 6 to 12 months if stored in airtight containers at room temperature, and for 12-24 months if frozen.

Marketing - Pollen has an unfortunate history of boom and bust marketing cycles, largely due to the coming and going of buyers and producers. If new producers drop large parcels of pollen onto the market without first organising their marketing, it is likely that the price will fall below the cost of production. Having said this, the market would appear to have broadened recently. The demand is there for sustained growth if producers remember to do their marketing before they produce their crop. So before you rush out and produce pollen, find somebody to buy it or a market where you can sell it.

Blending - If you are suppling your own market, it may be necessary to collect pollen over a period of time and blend it so that you have a consistent product to present to your consumer.

Where To Sell Pollen - You have two choices - you can either sell it to a buyer, or you can market it yourself. Harry Brown, the Executive Secretary of the National Beekeepers' Association, has a list of pollen buyers and sellers which he is happy to distribute to members.

Labelling/ Food Safety - If you are marketing and selling your own pollen, it is very important to remember the food labelling requirements, and food and safety issues. Pollen must carry a warning on the label regarding allergic reactions. For the correct wording, and other requirements, you should contact your local Health Protection Officer.

It is important that your pollen is well cleaned and does not contain things like mouse droppings, bee stings, parts of bees, etc. Believe it or not, people have actually been stung on the tongue from eating pollen that was poorly prepared.

Price - For the last 12 months, the prices paid for pollen have increased both domestically and internationally, and it appears that currently demand is outstripping supply. Cleaned, dry pollen is currently wholesaling for an average price of about $20/kg. Fresh pollen is wholesaling for about $15/kg.

- David McMillan, AAO, INVERMAY

GADGETS AND GISMOS

(This month: more of Murray Reid's handy hints, and some other good stuff from him, too)

Sticky Tops - Tired of tops that stick on tubes, especially on glue or nail polish. Before the screw bits get all gunged up, coat the threads with Vaseline.

Presto! No more throttled tubes or broken bottles. Works with tins of glue and paint, too.

Jack Exercise - If you have a hydraulic car or truck jack, it pays to operate the thing every now and again according to a beekeeper friend of mine. It's nice to know that now, after my old jack 'spat the dummy'. Seems the valves or something inside need regular use on the old 'use it or lose it' principle. I guess my jack was 14 years old and only got an outing about once every 2 years. I'm only glad I wasn't stuck out in you-know-where sort of country. And did I replace it with another hydraulic jack? Well no, actually. I went for a scissor-type jack, especially as they were the same price as a hydraulic one.

Magic Folding Sandpaper - Lost your sanding block? Well, no problem. Simply cut your sandpaper in half, turn it over so the sand side is facing down, divide the paper into 3 equal parts, then fold one edge over to your mark, and then the last edge over this section. What you should have now is a piece of paper with 2 sand surfaces top and bottom with the third surface in between. The sandy surface in between the top and bottom sheets gives a good grip on the paper as you sand and also presents a clean surface if refolded. And a last hint. Do this as soon as you buy your sandpaper sheets or someone will tear them apart and you won't have nice sheets to work with.

'I have a very serious announcement to make' -This was Russell Poole's inimitable way of introducing a commercial during the recent beekeepers' conference at Wanganui. I think most beekeepers were like me, waiting for some bad news (like a death or an EDPR alert). But what did we get instead? We got an announcement that "the price on the honey extractor electronic control unit has just come down 500 dollars". We all laughed so much that the President didn't even censure Russell for interrupting the serious business of conference.

Anyway, what is this control unit? In short it's a computerised controller that can operate the direction of travel of the baskets in an extractor, the acceleration and deceleration times, and the spin times. These can all be reset and altered manually during operation. The usual cycle for semi-radial extractors (and I guess tangential extractors) is a short run clockwise, a stop, a full run anti-clockwise, a stop, and a full run clockwise. However, these can be set to your specifications, as can the motor and gearbox.

The motor is a three phase, but it does not run on three phase power (if that makes sense). It plugs into a normal 3 pin socket and the electronic wizardry takes care of the rest. Units that have been fitted with the controller, motor and gear box include a 21 frame semi radial with a 5 to 1 gearbox and toothed belt drive, a 10 to 1 gearbox mounted directly on the extractor shaft, and a bottom drive extractor. The cost of the unit will depend on what you specify, but it is advertised at around $3500-4000. Contact is Century Systems, Stewart Poole, 431 Barbados St, Christchurch, ph. (03) 365 2969

Hobo Temperature Logger - This battery powered logger is slightly bigger than a box of matches, weighs about 25g, and can store 1800 data points in 2K of nonvolatile EEPROM memory. I'm not too sure what that all means, but it sounds good, especially when it can measure from -20oC to +70oC and the battery is supposed to last 2 years. Basically the unit can be used to monitor temperatures on shipments of bees or honey, especially during export.

Once you have the logger sent back to you, it's an easy operation to start the logger and download its stored information into your PC, using either Windows or Mac. The point and click software that enables you to do this is called Boxcar, and only costs US$14, including manual and interface cable. The logger

costs another US$49. Contact is Karen D'Elia, Onset Computer Corporation, Box 3450, Pocasset, MA 02559, USA, ph. 1- 508-563-9000, fax 1- 508-563-9477

PS - there are similar data loggers made in NZ which are used by some of our beekeepers. Hopefully we can report on these in another issue.

French Hive Lifter - I saw this nifty lifter at Apimondia in Switzerland last August. It's a bit hard to describe without using pictures, but it is very similar in many ways to the Pearson lifter described in The NZ Beekeeper, December 1976, page 9. The Pearson lifter is placed up to a hive, a chain is wrapped around whichever box you want to lift, and a lever action is used to crack the supers and lift off a box. The unit was really designed to allow you to lift off the honey boxes so you could get into the brood nest to insert an escape board or remove the queen for autumn requeening, etc.

The French lifter (called a Bencsik lifter), on the other hand, is basically a crane that unfolds and is placed over a hive. It does what the Pearson lifter does and more. A scissor action cradle is put over the box or boxes to be lifted and tension is applied by an electric crank handle which can also be used manually if the battery fails for any reason.

The lifter can be used to lift whole hives, or selected boxes to under super or insert a queen excluder or escape board. Honey boxes can be swung onto a wheel barrow or down onto a pallet. This is something the Pearson lifter was not designed to do. And when you have finished, the unit folds flat into a bundle measuring 140cm x 65cm x 18 cm, so it can easily be stowed in the back of a car, etc. The whole unit only weighs 10 kg.

I didn't get a price from the inventor-builder, but he was quite a character. He didn't speak any English, but that didn't stop him talking up a storm. Fortunately, when I called at his stand his son was there to interpret. You can get more information direct from Jopseph Bencsik, 23 Bld. des Castors, F-69005 Lyon, France, Fax 33-72570047

There's No Fuel Like an Old Fuel - The debacle over unleaded premium or super petrol still lingers, but what about the myriad of other small motors we all have around the place. Motors for chainsaws, bee blowers, weedeaters, motor mowers, outboard motors, etc. What sort of fuel are we supposed to use for these?

The AA Directions magazine in March 1996 is careful not to give actual recommendations, but in general says-

* cars or motors made after 1991, or those already on 91 octane petrol won't need the lead additive;

* 2 stroke motors shouldn't need the additive either;

* 4 stroke motors, if on 96 octane, may need the additive, especially for hard, prolonged or regular work;

if in doubt check with your service provider.

Hot Air vrs. Steam - According to the July 1996 issue of the Australian Bee Journal, several beekeepers across the pond have switched from steam injectors in their extractors to hot air blowers. Ian Cane, the author of the article, is using a Thermocouple Heat Gun, which blows hot air into the centre of his extractor. This particular model has a 2-speed air flow. Low speed blows out 300 litres of air/minute, while high speed does 500 litres/minutes. The model

also has a variable temperature control of from 120oC to 650oC at 2000 watts (8. 5 amps).

According to the article, this type of heat gun can be purchased for around $ AUS100. They are usually used in the building trade for softening moulding, shaping and welding PVC, paint stripping, etc. However, with careful attention to your operation, the honey type, and your cycle time, they work well to get that little bit of extra honey from the combs during extraction.

BEEFAX

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AUSTRALIA SPECIAL ISSUE

Last month, six MAF Qual apiculture officers took a one week trip to Queensland, Australia. The trip was paid for by the government-funded honey bee Exotic Disease and Pest Response (EDPR) programme, and was used to help train these officers in identifying European foulbrood (EFB). Everyone who went on the trip plays an important role in our honey bee EDPR system (which includes EFB). As well, the officers are involved in active surveillance for exotic bee diseases. They help inspect over 500 apiaries throughout New Zealand for signs of EFB, as well as take samples of bees which are then analysed for parasitic mites such as varroa and acarine.

The trip to Queensland gave us a unique chance to see EFB "in the flesh". And because of the low trans-Tasman airfares, we were able to go there for less cost than if we had carried out a similar programme in New Zealand (and we wouldn't have found real EFB in hives, of course!) At the same time, we were able to visit a number of beekeepers, a beekeeping equipment manufacturer, and Australia's biggest honey packer. The result was a pretty comprehensive picture of commercial beekeeping as it is carried out by our nearest international neighbours. In this issue, we thought we'd share with BeeFax readers some of the high points of our trip.

EFB AND AFB

The good news for us is that we were actually able to find several apiaries with infections of EFB. The good news for Queensland beekeepers is that the disease is no longer regarded to be a major beekeeping problem there.

This is not to say, of course, that it wasn't a big disaster when it first arrived in the Australia. The disease was first identified in Victoria in 1977, and within 12 months had spread to all the eastern states except Tasmania. By 1980, EFB was being routinely found by beekeepers in Queensland.

According to the commercial beekeepers in Queensland that we talked to, the spread of the disease in that state was quite dramatic. As soon as it was identified in any particular apiary, it seemed that apiaries throughout the local area were also found to be infected. And the infections were generally not light. Whole combs were found to be filled with the characteristic corkscrew-shaped, yellowish dead larvae, and the honey production from infected hives was noticeably diminished. As one beekeeper told us, "if a hive isn't ' white waxing' on a honey flow in Queensland, either the queen is stuffed or the colony has EFB."

The standard response to the outbreak was to feed oxytetracycline (OTC) to all the hives in infected apiaries. The drug was also fed for a number of years as a prophylactic to reduce the chances of the disease developing in any hives.

The drug had an immediate beneficial effect on EFB hives, and beekeepers told us that a number of outfits overcame the disease within two years. In fact, more than one beekeeper we interviewed told us that "if we hadn't fed drugs we would have lost our entire outfits to EFB".

In retrospect, the effects OTC had on the EFB-causing organism (Mellissococcus pluton) shouldn't be all that surprising. Unlike Bacillus larvae, the causative organism of AFB, M. pluton doesn't produce spores. It only exists in the vegetative form, and was therefore very susceptible to the antibiotic. This was no doubt the reason it cleared up the infections so quickly, and also the reason why the disease often didn't reoccur.

Sixteen years later, EFB is only found at a very low incidence in Queensland hives, although we understand that the disease is far more prevalent in the colder, southern areas of Australia. Beekeepers in Australia associate the disease with stress factors such as cold weather conditions and poor hive nutrition.

The blanket use of OTC as a prophylactic has also changed. In Queensland, as in other Australian states, OTC can no longer be purchased "over-the-counter" to be fed to bees. The drug can now only be prescribed in small amounts to treat infected colonies, and then only after a confirmed diagnosis of the disease. All the beekeepers we spoke to strongly supported this change to tighter OTC control, and they all also said that they generally don't even use the drug any more. EFB is usually controlled either by destroying the hive, or by burning infected frames and uniting the weakened remains of the colony with another hive.

I was quite surprised by the Queensland beekeepers' strong anti-OTC stance, but the reason for their change in attitude became evident when we talked with Queensland Department of Primary Industry (DPI) personnel. The big bee disease problem these days in Queensland is AFB, and it is generally accepted that the rapid increase in AFB incidence in that state (and elsewhere in Australia) is the result of the masking effects of OTC on that disease. It seems the OTC fed routinely to hives in the 1980's for EFB also dealt with the visual symptoms of AFB (caused by the vegetative stage of B. larvae). However, it didn't destroy B. larvae spores, and those spores have now in many cases been unwittingly spread from infected hives to uninfected hives by the beekeepers during their normal commercial honey gathering operations.

It's unclear what the real incidence of AFB is in Queensland at present, mostly because the DPI has until recently not had an effective apiary registration and disease reporting system. That is all changing, however, and beekeepers there are now being required to furnish honey samples from each of their apiaries when requested. The honey, as well as samples provided by the Honey Corporation, are cultured to diagnose the presence of B. larvae spores. Whenever high levels of spores are found, apiaries belonging to the beekeeper are inspected by DPI personnel. At least seven beekeepers have been found to have AFB outbreaks during this season alone, often with 60 or 70 hives in an apiary infected.

Interestingly, the Queensland Beekeepers' Association has recently adopted a goal to eradicate AFB from the state. Unfortunately, however, they currently do not have nearly the same infrastructure or funding programme we have here in New Zealand to help them achieve that goal .

- Cliff Van Eaton, AAO, TAURANGA

GUILFOYLE'S

One of the highlights of our trip to Australia was a visit to John L Guilfoyle Pty. Ltd. This company, established forty years ago, is by far the largest manufacturer of beekeeping equipment in Queensland. The company is managed by Jan and Ross Guilfoyle, daughter and son of John, the founder. The company employs some 17 staff at the Brisbane branch.

Guilfoyle's also has two other branches, one in New South Wales and one in Western Australia. The Western Australia branch is owned by the company, but trades as an independent entity. Guilfoyle's also owns a plastics manufacturing company in Sydney.

The company manufactures the whole range of woodware, excluders, uncappers, small extractors and other items normally used by beekeepers. In addition, they process foundation, and have a successful slumgum wax recovery operation, which costs the beekeeper AUS$0.30 per kg of wax recovered. And when seasonal downtime allows, Guilfoyle's manufactures alternative wooden products such as colonial furniture and other mass-run items including cornices, skirting board, shiplap and copy lathe turned products. Guilfoyle's produces three interesting products which are not normally available in New Zealand: plastic end bars, ripple wired foundation and "Plasticore" foundation.

Plastic end bars - Guilfoyle's plastics factory in Sydney recycles ABS plastics products such as discarded phones from Telstra, the Australian equivalent of Telecom. The recovered material is then used to produce plastic end bars. The end bars are slotted at both the bottom and top to hold shortened pieces of wood which act as top bars and bottom bars. Neither piece needs to be rebated, since they just fit into the end bar, and the top lug is an integral piece of the plastic end bar.

Ripple wired foundation - Guilfoyle's produce a type of wire-reinforced foundation which is common in North America (where it is referred to as " crimped wire foundation"). Guilfoyle's calls the product "ripple wired" foundation. Ripple wired foundation is formed by passing spaced sheets of " standard" foundation through a dedicated machine that takes seven rolls of stainless framing wire, forms the wire into a continuous zig-zag (the "ripple"), then forcibly embeds the wire (with the ripple lying flat on the sheet) into the wax. The wires run top to bottom and are equally spaced across the foundation. Ripple wired foundation satisfies a demand for honey comb that will withstand the rigours of long distance trucking over rough roads without cracking. It also minimises comb slumping brought on by the extreme heat often encountered in western Queensland.

Plasticore foundation - Guilfoyle's produce an additional wax foundation product called "Plasticore", which is also produced in the US by Dadant's under the trade name "Duragilt". To manufacture this foundation, a dedicated machine is also used, one of only two in the world. The process involves drawing a continuous sheet of thin plastic through liquid wax so that it is covered on both sides. The liquid wax is cooled to make the wax stick to the plastic, then it's passed through printing rollers to form the required hexagonals. The result is a strong, vibration-resistant, sag-resistant product. The foundation is also particularly suitable for comb recycling. The foundation can simply be scraped down to the plastic core and then reused. As well, if a frame breaks, the whole comb can easily be removed and reassembled into a new frame.

The main draw back of Plasticore, according to Jan Guilfoyle, is that it takes " seriously strong bees" to draw the foundation out into comb.

(Editor's Note: Plasticore and ripple wired foundation are not available in New Zealand. Plastic end bars have been sold in New Zealand, at least in the past.)

- Dave Grueber, Apiculture Officer, BLENHEIM

QUEENSLAND BEEKEEPING

Honey Chasers - Commercial beekeepers in Queensland tend to regard themselves as "honey chasers", spending lots of time on the road, either checking out the budding of nectar sources in their various apiary sites, or hauling hives and honey boxes to and from these sites. It is quite common for such beekeepers to shift their hives 6-10 times during a full beekeeping season.

To run a beekeeping business in Queensland, one of the first prerequisites is to have the right vehicles. A good beekeeping transport rig consists of a 10 tonne truck, a trailer with pneumatic suspension, and a Bobcat loader with forks for loading and unloading hives and honey. A setup like this, which can service around a thousand hives, can cost AUS$200,000.

However, some beekeepers there are starting to see the light, at least when it comes to all that truck driving. Charlie Stevens of Warwick, Queensland, is a beekeeper of some 40 years experience. In common with other beekeepers in that area, he takes hives up to 800 kms "out West" into the semi-arid southwest of Queensland. The costs of the long distance travel with his own large truck and semi-trailer forced him to look at using a local transport company to assist. In one season he saved himself 14 trips and around 21 days driving, freeing up considerable time, and also a bit of money. He's still improving his own trucks, though, and has just bought a new Bobcat loader and is palletising all of his hives.

No Forklift Needed - Have you ever thought how much easier it would be not to have to lift full drums of honey up to the deck of a truck. At Charlie Stevens's honey house in Warwick, the full drums of honey are stored on their sides on a timber rack that is the same height as the landing in the honey house and the height of the truck deck. When the drums are filled, they are turned onto their sides and rolled onto the rack. And when the transport calls to pick up the drums, they are simply rolled onto the truck. The rack is made of two poles laying parallel about 1m apart on posts set in the ground. Very simple and efficient!

Dead-Hot Bees and Tipping - One of the more unusual problems faced by beekeepers in the hot, arid outback of Australia is the death of bees blown out of honey-filled suppers. Yes, believe it or not, beekeepers there are often unable to use a blower to remove the bees from their supers because the bees will not survive the brief contact with the hot ground. The temperature of the soil is so high that the bees often only manage to crawl a few centimetres before dying of the heat. Instead, some beekeepers use a technique called " tipping". Provided the bees are on a good honey flow, the beekeeper just turns the full supers on their end on top of the hive. In about three hours the supers are ready to be collected with all the bees back in the hive storing more nectar. As you can imagine, however, if the bees aren't on a good flow, or if the weather changes, robbing bees can lead to chaos. As a result, many beekeepers who do not trust the tipping method use escape boards instead.

Nectar and Pollen - There's no doubt about it -- Australian beekeepers can produce big honey crops! If the moisture conditions are right, and the trees in the vicinity of an apiary site are in heavy bloom, a super of honey per week is quite on the cards, with the flow lasting from between 3 and 6 weeks. And

it doesn't necessarily matter what time of the year it is. Charlie Stevens and several other beekeepers take their hives to the Channel Country in the "winter" and work the napunyah flow. This year Charlie has already produced about 100kg of honey per hive from that source, and that's before the spring and summer nectar flows have even begun!

The more normal Queensland honey sources include at least 7 varieties of iron bark, yellow box (which is the highest priced honey), and white box, spotted gum, hill gum and canola (oil seed rape).

A particular problem of Australian beekeeping is pollens which are inadequate for bee nutrition. Because there are very often only one or two pollen sources in an area, it is likely that one or more of the essential amino acids may be missing, making the pollen a poor source of protein. In fact, Australian hives have been known to dwindle and die with a honey crop on board, when pollen sources either dry up or are of poor quality.

Beekeepers therefore often shift their hives to good pollen flows to increase brood production before going to another nectar flow. Favourite pollen sources in Queensland which provide a good balance of amino acids include turnip weed, wattle and pea bush. Beekeepers also sometimes feed pollen substitutes to make up for amino acid deficiencies.

Boxes, Excluders and Frames - I was always under the impression that the standard Australian bee box was an 8-framer, but that size now seems to be confined to a few areas in the southernmost areas of Australia. Beekeepers in Queensland use a standard 10 frame full-depth super, just like we use here in New Zealand (in fact, many of the boxes are now being produced by New Zealand woodware manufacturers).

Unlike New Zealand beekeepers, however, Queensland beekeepers run one super brood nests, and use excluders to separate the normal two honey supers from the brood box. This type of production system requires young, vigorous queens which can maintain full egg-laying during honey flows, and intensive honey removal to ensure that the brood nests do not become honey bound. And as you can imagine, if you are producing 100-150kg of honey per year, over a number of honey flows, your queens are doing a lot of work. So annual queen replacement is standard operating procedure for these beekeepers. Interestingly, however, very few of the beekeepers we met rear their own queens. They're so busy chasing honey that they rely instead on commercial queen producers to supply their needs.

The other noticeable difference between New Zealand and Queensland hive management is that Queenslanders replace their combs on a very regular basis. The consensus seems to be to replace 2 combs per box per year, resulting in all combs in a hive being replaced every 5 years. The beekeepers believe this replacement comb policy results in less diseases such as AFB, EFB, chalkbrood and nosema in their hives

"Hey, this is my apiary, mate! I've got a permit"- In Queensland State Forests, as in all of eastern Australia, beekeepers can apply for apiary sites under a permit system. Individual apiary permits cost around $50-$60 per apiary per year. Once a beekeeper receives a permit, no other beekeeper can put an apiary in that particular allotment in the forest. Often these sites may only be used by the beekeeper one or two times in five years. However, the permits are jealously guarded and consequently are almost always renewed every year. Many apiary sites have been held using this permit system for as long as 40 years. It's a bit likely Monopoly really, where you try to get your hands on as much real estate as possible in the hope that it will guarantee you an income. The

apiary sites are located on forestry fire breaks and are usually spaced about 3/4 km apart. There are often hundreds of apiaries in any one forest, with each apiary containing 50-100 hives.

A Chilly Solution to an Old Problem - A number of Australian beekeepers have drastically altered their management practices recently in an effort to avoid chemical contamination of the honey they produce. An ongoing problem in Australia's hotter climates is the greater wax moth (Galleria mellonella), the same species we have in the warmer parts of New Zealand. The moth can do considerable damage to stored supers. The control of wax moth traditionally involved the use of chemicals such as Phostoxin or paradichlorobenzene (PDB). In recent years, however, some Australian beekeepers have turned to the use of coldrooms for wax moth control, since wax moth growth is restricted at low temperatures. For example, Robert Sterling of Stanthorpe, Queensland, built a coldroom with a capacity of 2,000 10-frame supers. The coldroom is constructed entirely from panels of Styrofoam sandwiched between Colourbond sheets (the kind used in freezing works, etc). The floor is a concrete/Styrofoam sandwich. The room is maintained at a constant 5oC by an external refrigeration unit. The doorway opens to allow full forklift access to all stacks of combs. In 1996 prices, the coldroom cost about $30,000 to build.

Varroa at the Doorstep - It's now pretty common knowledge that varroa has been found in the Torres Straight on islands belonging to Australia. What is perhaps less well known is that they are now finding swarms of Apis cerana (the original host of the mite) on ships coming into Australian ports. Two such swarms have been found recently, one on a ship in Port Adelaide and another in Brisbane. According to the Australasian Bee Journal, it is believed the Port Adelaide swarm contained a small infestation of varroa. Northern AQIS staff are surveying for the mite on the Torres Straight islands, and there are two monitor hives of A. mellifera at the Bamaga Aboriginal Reserve on Cape York, which are serviced by AQIS staff from Cairns. As you can imagine, Queensland beekeepers are very concerned about the situation, and several told us they hoped that the government would do more to prepare for any mainland incursions of the mite.

The Bees --They Just Hang Around - In the stone fruit and apple growing areas of southeast Queensland, pesticide spray damage to bees is a big concern. The problem is compounded by growers who diversify their crops to improve incomes, and turn to vegetables such as tomatoes, which constantly require spraying to deter insect damage.

During the last 10 years beekeepers in this part of Queensland have also been subjected to an entirely new threat associated with fruit growing. The region is prone to severe hail storms in the summer, at just about the time that the fruit crops are ripening. In an effort to protect their fruit, growers have covered huge areas of fruit trees with hail netting. And herein lies the problem for beekeepers. First, their bees have difficulty navigating in the orchards because the environment has an artificial "ceiling" -- the hail netting. Second, the mesh width of the netting is just the right size for the bees to get their heads stuck in. And yes, you guessed it, bees literally die in their thousands by hanging.

- Robert Rice, AAO, LINCOLN; Phil Sutton, AO, TIMARU; Paul Badger, AO, GISBORNE

THE HONEY CORPORATION

No beekeeping visit to Queensland would be complete without a visit to the Honey Corporation of Australia, better know to Australian consumers as Capilano

Honey. The Honey Corporation is by far the largest packer and exporter of honey in Australia, controlling 60% of the domestic market, and 85% of the country's exports. The corporation was founded by Tim and Bert Smith in 1954, together with a group of commercial beekeepers who wanted an orderly system of marketing and payment for the honey they produced.

There are three branches of the company, all on the eastern seaboard of Australia. The other two branches are at St. Mary's, Sydney, NSW, and Maryborough, Melbourne, Victoria. The main office of the corporation is at the Brisbane branch.

The company now has over 800 beekeeper shareholders. Ordinary shareholders have 1600 shares per 100 hives, and are able to buy and sell their shares to others, provided the company agrees. Beekeepers supply honey on a monthly quota basis. The quota is determined by the company, and is based on an assessment of average yearly production by the beekeeper.

Beekeepers are paid for their honey 30 days following supply. During the drought and production downturn experienced over the last three years, the company also acted as a lender to beekeepers, paying out in anticipation of honey produced. In 1994, this lending policy resulted in the corporation carrying an AUS$18 million overdraft. Needless to say, the corporation is looking forward to a bumper honey crop in 1996-97 brought on by the end of drought conditions in most of eastern Australia.

All honey is supplied by beekeepers in 300 kg zinc-coated drums. The drums are owned by the beekeeper, and have their tare weight and beekeeper name written on the outside. At the time of receipt into store, the drums are weighed and a delivery weight receipt is furnished to the beekeeper. The drums are also sampled and the samples are analysed for colour (mm Pfund) and moisture (%). Samples are also tested for antibiotic residues and Bacillus larvae spores.

A major problem for the corporation are the zinc-coated honey drums. Drums are routinely stored outside (both at the packers and by beekeepers), and the heat which is absorbed, together with the high acidity of the honey, creates a chemical reaction with the coating. Unacceptable levels of zinc have been found in some retail packs of honey, and the Honey Bee Research and Development Council (HBRDC), together with honey packers, are investigating alternative honey storage materials and techniques.

Contamination of honey with antibiotics such as oxytetracycline (OTC) fed for the control of European foulbrood, is also a concern of the corporation. However, because of the decline of incidence of the disease in Queensland hives, and the tightening of state regulations regarding distribution of the drug, the potential for contamination has been reduced. In recent times, two consignments of honey put through the Brisbane plant have been found with OTC residues.

The Brisbane plant packages 6500 tonnes of honey per year, but has at times topped 8000 tonnes. That's more than the average annual production for the whole of New Zealand! Similar amounts are also packed in the Sydney plant, with about 4000 tonnes p.a. being packed at the Melbourne plant.

The Brisbane plant has a potential throughput of 36 tonnes per day. All honey is first melted out in the drum in a large-capacity hot room. The honey is raised in temperature to 45oC overnight, and then poured from the drums into troughs running the length of the hot room.

The honey is then flash-heated through a heat exchanger and processed through a

high-speed centrifuge capable of separating honey from dross at a rate of 10.5 tonnes per hour. The main bi-product of the centrifuge process is beeswax, which is produced at the rate of 10 moulds (6-8kg per mould) per day. The centrifuge is unique in the world of honey processing, and cost AUS$250,000 to fabricate and install.

The centrifuge separates out sugar crystals and other fine impurities which could act as a starter for crystal growth. By using the centrifuge, the corporation can produce a liquid honey pack with a shelf-life of approximately 6 months without resorting to extended heat treatment. Extended heat treatment can alter the flavour and colour characteristics of honey.

The honey is then either put into export drums (at a pumping rate of a 300kg drum every 2 minutes), or bottled in the bottling plant. The plant is capable of filling, labelling, capping and boxing 45,000 375gm jars per day. All jars are secured with a tamper-evident seal and date-stamped.

Capilano also packs generic packs for a variety of retail chains. The honey used, however, is stronger tasting and has a higher Pfund reading that the Capilano brand.

Packed product is stored using a warehouse racking system which allows full pallets to be stored without jar breakage. The plant has a 5 week turnaround for all packed lines.

- Cliff Van Eaton, AAO, TAURANGA

KILN STERILISER FOR AFB

The Australians are currently trialing an AFB sterilisation technique that may change the way we deal with AFB-infected woodware. To date, the only acceptable and sure way in New Zealand to sterilise infected woodware has been to wax dip in paraffin at 160oC for 10 minutes. However, the DPI in Queensland is currently conducting research into the use of timber kilns to kill Bacillus larvae spores.

Their first trials involved running a laboratory wood kiln at 110-120oC for 5 hours, and testing it against B. larvae solutions on wood. Once the heating process was finished, the solutions were plated out on agar to determine if any of the spores remained viable. The first trial was done using 5 boxes. Four hours turned out to be too short a period, but 5 hours fully deactivated all spores.

The next step was to conduct a commercial trial using 280 bee boxes in a commercial-sized kiln. The boxes were spiked with B. larvae solutions in 80 marked spots throughout the stack of boxes. The control for the experiment was to spike a further number of boxes with the same solution and then leave them out in the sun.

The boxes were heated to 110oC over a period of 6 hours, and then held at that temperature for a further 5 hours, with a final half hour period during which steam was pumped into the kiln. The purpose of the steam was to increase the moisture of the timber, since it had dropped to about 1% during the trial. The process is referred to as "reconditioning" the timber.

The boxes were stacked four high in the kiln, and the stacks were fitted with temperature sensors. Unfortunately, the sensors told them that the top boxes in the stacks were not coming up to temperature as quickly as the bottom boxes.

This inconsistency in heating is likely to have had a adverse affect on the sterilisation, because when they plated the spikes of B. larvae solution, they found that not all the spores in all the spikes had been destroyed.

The DPI is still encouraged by the test and believes that with a better kiln and improved stacking the process will be successful.

The Australians were using an old kiln, and more modern machines are available. One of the best of these kilns is the New Zealand-built Windsor, which can get up to temperatures of 200oC in only 20 minutes. These kilns have a energy surplus of 50% beyond that temperature, so they are able to get to the 200oC mark very quickly.

It will be interesting to monitor the DPI work in the future to see if they can achieve commercial sterilisation of B. larvae in bee boxes on a routine basis. If they can achieve good results, I'm sure with the number of efficient commercial kilns we have here in New Zealand, we will be able to use the method, too.

According to Murray Reid, kiln sterilisation of B. larvae spores was trialed years ago by beekeepers in the Waikato, with apparently good results. However, the trials were not monitored scientifically, and no adult bee testing was done once the boxes were put on hives, so it is impossible to know whether any subsequent infection may have come from the boxes. One outfit melted up nearly all their honey boxes, and kiln-treated the supers and empty frames in an attempt to break the re-infection cycle. The only apparent down side of the operation, apart from the cost, was a cosmetic one. Propolis ran all over the outside of the boxes. But a coat of paint fixed that.

- James Driscoll, AAO, PALMERSTON NORTH

BEEFAX

Vol 2, No 2

November, 1996

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BEEFAX

Vol 2, No 3

December, 1996

BEEFAX COMES ON BOARD

If you are already a BeeFax subscriber, you'll know that this is the first issue of our newsletter in its new format. The executive of the National Beekeepers' Association (NBA) has kindly decided to include BeeFax as a regular insert in The New Zealand Beekeeper magazine. My colleagues and I are really delighted to be part of the NBA's monthly journal, and we'd like to express our sincere thanks to your organisation for allowing us to take part.

For those of you who are new to BeeFax, welcome! We hope you will find much of interest in these pages, whether you are a one hive hobbyist or a large commercial operator. BeeFax began publication in October, 1995, and is designed to combine the best elements of the old Apicultural Advisory Officer (AAO) newsletters and the NBA's Buzzwords newsletter.

The AAO newsletters were a feature of New Zealand beekeeping in the '70's and ' 80's. They contained lots of interesting information on a variety of beekeeping matters. But when user-pays hit the scene in the early '90's, the newsletters (at least on a district basis) could no longer be made to fit into the budget.

Buzzwords, of course, was a more current-events style publication, and I had the good fortune to be the publication's editor for two years until it was replaced with the monthly New Zealand Beekeeper magazine in 1993.

I've personally always enjoyed writing and editing beekeeping newsletters, mostly because I believe that communication is one of the most important roles an AAO can provide to the beekeeping industry.

So in producing BeeFax, we've tried as much as possible to assist in that communication process, by including lots of beekeeping information (a la the AAO newsletters), together with a bit of Buzzwords-style current events. Highlights of our first year included:

* excellent articles on nosema and EFB by Robert Rice, our resident expert (Robert is doing his PhD on nosema)

* an Australia special edition, in which we reported on an EFB study tour to Queensland last September

* descriptions of new honey processing machinery seen at the Apimondia world beekeeping congress (including a new system of dealing with extraction cappings and a machine that removes crystallised honey from drums without using heat!)

* news regarding a bee-safe apple thinning spray which will replace the use of Carbaryl

* updates on the world honey market and the big hive losses experienced in North

America last season

* A guest article on breeder queen management by Norm Rice, for many years one of the Southern Hemisphere's largest commercial queen producers

* a review of the world-wide debate about the ecological effects of honey bees on native environments

* a continuing series on beekeeping's place on the rapidly expanding Internet

For the future, our promise is more of the same. We'll make sure to include as many new products and ideas as possible into our Gadgets and Gismos section, and we'll have more articles on bee diseases. We'll keep you up-to-date with what's happening in beekeeping overseas, and we'll include reports from time to time on the New Zealand retail honey market.

In fact, the only thing that has changed is the way we distribute the newsletter itself. The play on words that is the title of this newsletter comes from the fact that for the first volume, at least, subscribers had the option of receiving BeeFax in the traditional way through the mail, or more immediately through a high-tech broadcast fax.

Now, of course, BeeFax is being included as an insert in The New Zealand Beekeeper. But for those beekeepers out there who want to get their newsletter "hot off the press", you can still do so by contacting David McMillan, AAO, Invermay (see the back page for contact details). For a transmission fee, David can put your fax number on his computer fax program and send you a copy of BeeFax on the first working day of every month. A full set of the first volume of BeeFax is also available from David, at the cost of $30 (incl. GST).

- Cliff Van Eaton, AAO, TAURANGA

CEREAL BOX SCIENCE

Times are tough for honey bee research in North America. Budgets have been slashed, staff are being made redundant, and there is even talk of research centres closing. And all this is at a time when honey bees in that part of the world are under serious threat from parasitic mites (varroa and acarine mite) and the Africanised honey bee.

But rather than take the budget cuts lying down, a group of scientists and beekeepers in the United States have done some lateral thinking, and the result is a most ingenious means of raising much needed research dollars while at the same time publicising the importance of honey bees to the nation's economy.

General Mills, a multi-national breakfast cereal manufacturer, together with entomologists and representatives from the American Honey Producers' Association, has launched a national campaign to raise funds to "accelerate study of a crisis that threatens to eradicate America's honey bee population and devastate American agriculture."

According to Dr. Eric Mussen, Professor of Entomology at the University of California, Davis, the invasion of honey bee parasitic mites "now represents the single greatest threat to ever confront the food chain and America's agricultural industries." Almost all of America's feral honey bees have been eradicated by the mites since they first arrived in the U.S. As well, more than 60 percent of America's commercial honey bees have been killed.

The campaign centres around Honey Nut Cheerios, one of the most popular breakfast products produced by General Mills (honey is obviously an important ingredient). As part of the Honey Nut Cheerios "Save the Honey Bee" campaign, between now and January 31, 1997, General Mills will donate 25 cents for every honey bee logo clipped from the front of a Honey Nut Cheerios box and mailed to the company. The cartoon like drawing of the honey bee has appeared on the front of the Honey Nut Cheerios boxes since 1979.

General Mills stands ready to donate up to US$100,000 for honey bee research. The funds will be evenly distributed to three of America's premiere honey bee research centres: the University of Minnesota, Michigan State University and the University of California, Davis. Each school has honey bee research programmes that have been working on the mite problem.

General Mills is also running an 0800 "Help Save the Honey Bees Hotline" number for those people who wish to find out more about the programme. Callers receive a free honey bee information packet.

Source: BEE-L Internet Bulletin Board, October 25, 1996

SATNAV FOR HIVES

Some of you may be wondering why we ask for apiary grid references on Statements of Inspection and Apiary Registration forms. The idea originally came from beekeepers who took part in the Nelson Emergency Pest and Disease Response (EDPR) in 1991. They found that the landowner and road name information supplied just wasn't good enough to locate hives quickly and cost-effectively. We have also come to realise since then that grid references make the job of area clearances for beekeeping industry exports both easier and less time-consuming.

The map references you've given us have been used for locating hives during EDPR exercises that we've been holding all over New Zealand in the past couple of years. With a map reference and 260 series map, our inspection teams have been able to find most sites without too much trouble, provided that references are accurate and that the hives can actually be seen from the road. Now we also have another tool that we can use. MAFQual has recently purchased a Trimble GPS (Global Positioning System) unit. This small, hand-held device can give its position accurately to within 100m anywhere in the world! The " Scoutmaster" model we have gives coordinates in latitude and longitude as well as NZ 260 nomenclature.

You can also type the coordinates of a site into the unit, and it will show you in which direction to travel to get to the site. Once you are moving it also tells you your compass heading, your speed, and the time it will be when you arrive at the site. The information is updated every few seconds and is quite accurate, even in a car at 100kph.

In an EDPR, these machines will be invaluable for finding and pin-pointing the locations of hives, especially where the inspectors looking for them are not familiar with the district, or were we need to accurately log the position of every site in a district.

All we need now is for everyone to give us grid references for all of their apiary sites. If you don't have grid reference maps, or would like some help in working out how to calculate grid references, you can contact your local Apicultural Advisory Officer. They keep a complete set of maps for their Apiary District, and you can spend as much time as you need in their office

filling in the appropriate sections on your Statement of Inspection.

- Phil Sutton, AO, TIMARU

LEAFCUTTERS DOWN-UNDER

Draft quarantine requirements for the importation of the leafcutter bee (Megachile rotundata) are currently under development in Australia. The proposed conditions (if implemented) would potentially enable the importation of leafcutter bees from the same countries as those from which the European honey bee (Apis mellifera) can be imported.

The proposed health certification requirements for leafcutter bees insist that the source apiaries are free of leafcutter bee chalkbrood (Ascosphera aggregata) . To ensure freedom from chalkbrood, importers will have to carry out two culture tests, the first before shipment and the second on arrival into the Australian quarantine facility. Ascosphaera aggregata is specific to leafcutter bees, and along with honey bee chalkbrood (Ascosphaera apis) is the only other aggressively pathogenic species of chalkbrood found on bees.

During the development phase of the quarantine requirements, the United States Department of Agriculture (USDA) conducted transmission studies to determine if varroa mites could be introduced via leafcutter prepupae and/or cocoon material. The results from this study showed that transmission of varroa mites by this mode was not possible. Nevertheless, on arrival in Australia the leafcutter bee pupae will be hatched in quarantine and screened for other parasites.

It is my understanding that the leafcutter bees are initially to be used for the pollination of lucerne crops for seed production in South Australia. If approval is granted, the introduction of these bees may also have an effect on the Australian honey bee industry. For many years Australian beekeepers have tried to establish a serious pollination industry, and have had at least some measure of success.

Unfortunately , however, contract pollination has not developed to the same extent as in New Zealand and many other countries. Beekeepers in Australia continue to rely on honey production as their primary source of income. Often beekeepers provide hives for crop pollination at no cost to the farmer in an effort to guarantee access rights to properties for honey production.

If leafcutters are brought in to the country, for the first time these "new beekeepers" will charge for their services, since they will no longer have honey production to fall back on from their bees. Many of the traditional beekeepers have resisted this change for fear of loosing prime honey production country to the "new beekeepers". This, of course, is not likely to happen, as often honey bees and leafcutter bees are kept side by side in many countries (eg, Canada), and leafcutter bees don't produce honey.

One would hope that the Australian industry would take up this opportunity to explore new avenues of beekeeping, especially with the threat of varroa just off Australia's northern shores. Perhaps if leafcutter bees are introduced into Australia, and developed as a commercial industry, than an opportunity may exist for the New Zealand beekeeping industry to observe, learn and re-establish a similar new industry here. Leafcutter bees were introduced into New Zealand in 1971, but so far leafcutter bee pollination hasn't become a true commercial activity here.

- Robert Rice, AAO, LINCOLN

PESTICIDE WOES

In last month's BeeFax, we reported on the development of a new apple thinning spray to replace Carbaryl, which has been killing honey bees in the Hawkes Bay and other apple growing areas.

Now, with a solution on the horizon for that particular pesticide problem, comes word of another potential threat to honey bees. This time it's Orthene on boysenberries. The chemical has been used in several important berry growing districts in New Zealand this year to deal with a viral disease which has been publicised as the "AID's of boysenberries". The Orthene is applied to kill aphids, which have been shown to inject the virus when sucking on plant tissues.

The only problem, of course, is that the active ingredient in Orthene is acephate, a powerful organo-phosphate. We understand that applications of the chemical on boysenberries before and during the flowering period this year has resulted in bee deaths, and a reluctance on the part of bees to visit boysenberry flowers and do their vital pollination job.

It appears that Orthene may not be registered for use on boysenberries, and the label directions state "toxic to bees - spray must not contact plants from 7 days of flowering to petal fall if the plants are likely to be visited by bees." Unfortunately, however, some growers have still used the product, since the insecticide is one of the few weapons they have in dealing with what is a very destructive berryfruit disease.

One concern of beekeepers whose hives have been affected by the spray has been the possibility of the chemical getting into the nectar collected by the bees, and hence into the hives themselves. Acephate is a systemic, meaning that the material is absorbed into the plant itself and travels in the plant's sap. That's why it works so well on aphids.

However, the good news is that according to leading experts on pesticides and bee toxicity, most pesticides have not been found in nectar or honey. Drs. Carl Johansen and Dan Mayer, in their book Pollinator Protection, report that they have only ever found two insecticides (aldicarb and dimethoate) in nectar in quantities significant enough to cause contamination. Bees that do gather poisoned nectar usually die in the field or in the hive before giving up their contaminated load. Sick foraging bees making it back to the hive demonstrate abnormal behaviour and house bees remove them from the hive before they expel their load of nectar.

The authors state that "in bee poisoning investigations, detectable residues of pesticides have often been found in dead bees, pollen and bee brood, but not in honey. In those instances where insecticide contamination has been detected in honey, the amounts found were considered too small to be significant. Also they were only found in honey cold-extracted from frames and not filtered; they were not found in commercially processed honey."

GETTING BEES OUT

Extractor Fans - It's difficult to keep bees out of honey houses, especially in large, open-plan buildings designed to take forklifts. Several beekeepers in the Waikato and Rotorua areas have installed medium to large-sized extractor

fans in their sheds in recent years, and these seem to reduce or even eliminate the number of bees being attracted into the building. The fan sucks air out of the shed and seems to work by either creating a slight negative vacuum, or by eliminating or reducing the smell of honey. Bees will still come in with honey boxes, but they often get minced up in the extractor fans, especially if a light is set behind the fan.

Window Escapes - an idea that works well exploits the phototactic response of bees (ie, bees are attracted to light, so naturally they go to windows). Once on the window, they can be directed to the corners where you can make a hole covered by a wire cone or bee escape to encourage the bees to go outside (and not be able to get back in). The trick in getting them to the corners relies on the ability of bees to see colour interfaces (ie, dark and light boundaries). Simply paint a black V shape from each corner and down about 100 mm or so. The bees crawl up the window until they hit the black line, then scoot along the line until they reach the corner exit hole.

By the way, this interface business is the reason you get a lot of stings around the wrist if you are not wearing gloves. There is a nice colour boundary where your white overalls meet your arm. The same thing happens if you tuck overalls into black gumboots. Some people think stings around the ankles or calves is due to the smell from your boots, but it has really more to do with the colour boundary making these parts stand out. Come to think of it, maybe not-so-sweet smelling feet might have something to do with it as well!

Vacuum Cleaner - a good way to get rid of bees off the top of honey boxes or window sills is to use an old, or "dedicated" vacuum cleaner. The main thing to remember is to empty the cleaner each day or... "poo-pong!" You may need to tip the bees into a bucket of hot water or in the front of a hive since they can stay alive for some time in the vacuum bag.

- Murray Reid, AAO, HAMILTON

BEEFAX

Vol 2, No 4

January, 1997

CERTIFICATE CHANGE SAVES COSTS

A recently announced change to the export certificate for live bees to Canada is likely to substantially reduce MAF Qual charges to beekeepers this export season.

The change was negotiated with the Canadian federal government authorities by Dr. Jim Edwards of the MAF Regulatory Authority, and was released officially on January 22.

Export certification procedures for the Canadian market are currently being redrafted to meet the requirements of this new certificate by Ted Roberts, MAF Qual's export certification manager for bees and bee products. The change will result in a cost savings to supplying beekeepers of up to $11 per apiary, since MAF Qual Export Certifying Officers will no longer have to do area freedom clearances for apiaries supplying bees to Canada.

Shipments of package bees from New Zealand to Canada are likely to increase substantially this autumn to satisfy a greater demand from Canadian beekeepers who are expanding colony numbers in response to continuing high prices for their honey (see articles elsewhere in this issue).

WHERE'S THE HONEY?

Beekeepers in most parts of the country would have nodded in agreement with the recent TV1 news item reporting on below-normal honey production this year. The item dealt specifically with a one third reduction in crops in the Auckland area, but judging from reports from other parts of New Zealand, the situation appears to be quite similar in a number of areas.

The crop, which is always earlier in Northland, Auckland and the Coromandel, was seriously affected by wet, windy conditions in late spring. Manuka crops in those areas will be well down, although other sources did produce average crops of honey in some places.

That same late spring weather seriously affected early hives in kiwifruit pollination in the Bay of Plenty, as well as those hives either waiting to be shifted in, or remaining on honey sites hopefully to look after themselves. Hives coming out of pollination were not as strong as normal, and many were quite light for stores, despite the regular and routine in-orchard sugar feeding.

Cold nights and too much grass seems to be the problem in the Waikato. As one beekeeper put it, "The clover is there, but unfortunately the honey isn't".

The weather hasn't been much kinder in the Central and Southern North Island, although some later manuka may be produced.

In fact, the only exception to the rule in the North Island seems to be Hawkes Bay, where rain at the right time, and dry weather during the manuka flow has meant that a good crop is likely. The clover flow, on the other hand, has been more variable.

In the South Island, Southland has had the worst of the weather, with cold and wet right through spring and early summer. Central Otago may produce a fair amount of honey in most areas, and the Mackenzie Country looked good until they got a heavy frost.

The West Coast has had some dry weather during all the rain in the east, and crop prospects look good there, as they do in Marlborough. The Nelson area, however, is more patchy.

Canterbury was worrying about drought before Christmas, but over 100mm of rain fell in early January, complements of Cyclone Drena, which has set things up quite nicely.

A late flow, in fact, is what most beekeepers around the country are waiting for, and with the way the season has gone so far, it certainly is on the cards. But as we move towards the end of January, the chances of bee populations in hives being at a level which can take advantage of late nectar is greatly diminished. Still, according to the old timers, we have had good crops of honey produced in New Zealand in February. So let's keep our fingers crossed!

WORLD PRODUCTION DOWN (AGAIN)

One of the reasons it would be nice to have a bumper honey crop in New Zealand is because world honey production is expected to be lower again in the year just completed.

According to the US Department of Agriculture, honey production in the six biggest producing countries (China, the United States, Mexico, Argentina, Canada and Germany) is forecast to be 338,000 metric tonnes in 1996, down 26% from 1995. Only one of those countries (Mexico) reports an increase in production compared to the previous year.

China, the world's largest honey exporter, has had a 49% reduction in honey output, due mostly to unfavourable weather and a reduction in beekeeper numbers. Chinese consumption is also forecast to fall in 1996, due to the fall in production and the likely increase in the domestic price.

The United States is reporting an 8 to 10% decrease in production. The main reason is the reduction in colony numbers, down 19% in one year, and almost one third since 1990. The varroa and tracheal mites are the main culprits.

Argentina, currently the world's second largest honey exporter, is reporting a 25% drop in production compared to 1995. The lower production was brought on by drought during the summer, which reduced yields and delayed harvesting of the honey.

And in Canada, production is likely to be 10% lower than last year because of a harsh and prolonged winter. However, despite the expected fall in production, Canadian beekeepers are optimistic because of increased prices, and will be rebuilding colony numbers in the coming season.

Mexico's crop is predicted to reach 60,000 tonnes, up 20% on 1995. However,

output has yet to exceed the peak of 69,000 tonnes set in 1991. The current increase is reported to be due to a new policy encouraging beekeepers to utilise coffee plantations for honey production, with a subsidy being paid to the beekeeper to cover the cost of requeening to non-Africanised stock and treatment against varroa.

The 26% reduction in world production is the third decrease in a row. In 1995, production fell 4%, while in 1994 it was down 3%. World production is a full one third lower than in 1993, the last year when an overall increase was experienced.

[Source: Sugar: World Markets and Trade, USDA]

BEE NEWS AROUND THE WORLD

Honey Prices Up-Up-Up - In the October 1995 issue of BeeFax, we reported on the US federal government imposing a duty on Chinese honey, and the subsequent rise in honey prices in North America. Canadian honey was expected to fill much of the vacuum in the US caused by the Chinese honey being priced out of that market. Since that time, the US government has imposed a maximum volume quota on Chinese honey, which limits such imports to 20,000 tonnes at a minimum FOB price equal to 92% of the average price of all other honey imported into the US.

In October 1995, Canadian honey was selling at between NZ$1.71 and NZ$1.86/kg, although prices as high as NZ$2.44/kg (CDN$1.00/lb) were being reported. Now that the 1996 crop has been harvested and is being sold in Canada, the news is that prices are continuing to rise. The Autumn 1996 edition of Canadian Beekeeping magazine reports that bulk honey is being purchased from commercial producers at between NZ$2.92 and NZ$3.16/kg. Farm gate prices (gate sales) are around the NZ$3.51/kg mark, although the Ontario Beekeepers' Association is recommending NZ$4.68/kg.

According to the magazine, the wide variation in prices can be attributed to the differing financial positions of honey producers, with some needing to sell honey quickly at a lower price to clear debt. In the September 1996 issue of BeeFax, we reported that some 1kg retail packs of honey were being put onto Canadian supermarket shelves at the same price as some 500g packs (CDN$3.99).

Border Opening Vote Taken - The September 1996 issue of Alberta Bee News reports on the results of a survey of Alberta Beekeepers' Association (ABA) membership regarding the limited opening of the US-Canadian border to queen and packages from the US. In August, 79 voting papers were sent out, with 65 valid replies received (an excellent response rate of 82%).

The ballot paper asked beekeepers if they were in favour of allowing the importation of "treated" packages and queens from the continental US. By " treated" they meant that Apistan strips would be put in the packages and queen cages to kill varroa mites. Of those who voted, 54% were against the proposal. The paper also asked of those who voted "no" whether they would be in favour of just allowing the importation of treated queens. Only 8 beekeepers voted for this proposal (23%). The survey results have been forwarded to the Alberta Minister of Agriculture for his consideration.

Apimondia '97 - The 100th anniversary of Apimondia, the World Beekeeping Congress, will be held in Antwerp, Belgium, September 1-7, 1997. The conference commemorates the first such meeting of Apimondia, which was also held in Belgium just before the turn of the century. The general theme of the conference is "Ancient and Recent Beekeeping History". Session topics include

honey consumption and marketing, honey bee biodiversity, alternative control systems for bee diseases, bee pollination in developing countries, and apitherapy. For more details contact the Apimondia General Secretariat, Corso Vittorio Emanuele 101, Rome 1-00186, ITALY, phone/fax 39-6-685-2286.

Sauna Honey (!?!) - In Finland the sauna is a national pastime. Finns like to have a sauna at least once a week. They get a sweat up in the super-heated sauna room for 10 minutes or so, and then take a cold shower or a dip in a nearby icy lake, repeating the whole process 2 or 3 times.

Recently, Finns have started using honey in their saunas. During the heating process, they rub the substance on their hands, shoulders, hips and knees. The belief is that the honey helps soothe aching joints. The honey gets washed off when they take their post-sauna dips.

The practice has now become so popular that Finnish beekeepers are marketing special "Sauna Honey". The honey tends to be lower grade, but predictions say that saunas will eventually use at least 20% of the national crop. With less honey to go around, the use of honey in saunas is also starting to increase the price of higher quality table grades.

[Source: Australasian Beekeeper, October 1995]

Bee Brains and Drug Addiction - Bees are helping scientists unravel the mysteries of human drug addiction. Writing in the British science journal Nature, investigators from the Baylor College of Medicine in Houston, Texas, report that their computer model of a bee's brain is shedding light on how drugs can subvert the mechanism that controls cravings.

In recent research on the honey bee, the scientists have identified a neuron called Vummx1, which they say is responsible for keeping the insect up-to-date on the richest supply of nectar in an area. The neuron is responsible for providing the odour processing regions of the honey bee brain with rewards based on nectar collected. Once they understood the action of Vummx1, the scientists created a model of how the bee brain works during foraging, and how bees learn to avoid risk. The researchers hope to apply the model to human behaviour, and particularly to the role of brain dopamine in addiction.

[Source: Speedy Bee, November 1995]

NZ Lowest for Ag Subsidies - According to a recent survey, New Zealand continues to have the least subsidised farmers of any country in the Organisation for Economic Cooperation and Development (OECD). The OECD's latest annual evaluation of agricultural policies, markets and trade puts the value of New Zealand's agricultural support at 4% of total agricultural production. Only this country's poultry farming stood out as having a relatively high level of support, in the form of sanitary provisions to keep New Zealand free of bird diseases. Disaster relief was the only source of direct payment available to New Zealand farmers.

Australia had the next lowest level of farm subsidies, at 9% of total production, while Switzerland topped the lists at 81%. Japan and Norway were also very high, at 77% and 74% respectively, while the US weighed in at 15%. The average for the European Union was 49%.

[Source: Evening Post, May 1996]

BACTERIAL RESISTANCE AND HONEY

The development of antibiotic resistance by bacteria is a major concern to world health. The antibacterial properties of honey are now being investigated because honey may give us another weapon in fighting bacteria which have become resistant to man made antibiotics. Some floral sources of honey have been able to inhibit the growth of some of the most concerning resistant bacteria under strict laboratory trials.

However, the question is often asked, what causes bacteria to become resistant to antibiotics?

Within some bacteria are small circular DNA bodies known as plasmids. These are simply two small complementary DNA strands in a circle. Each of these circles contain a few thousand molecules of DNA material known as bases. These bases combine together to form DNA strands in such a way that they can act like a 'blue print' for the formation of proteins that can have important functions in the bacteria.

This information is contained in a unit known as a gene. A gene may carry information for the inactivation of an antibiotic drug. There can be a number of different genes in a plasmid, all forming proteins that can inactivate antibiotics.

Plasmids are found separate from the bacterium's main DNA chromosome. A chromosome is the term for the DNA when it is packed away within the bacterium. Plasmids, on the other hand, are not always necessary for the bacterium's survival.

However, the plasmid can be responsible for inactivation of an antibiotic by blocking the mechanism of the antibiotic. The blocking is undertaken by a protein formed in the bacterium as a result of the information contained in a gene on the plasmid's DNA complex.

This information can be passed on from one bacterium to another in a process known as 'conjugation'. This is when two bacteria come together and a single DNA strand from the plasmid's duplex separates and moves though to the reciprocating bacterium. Once in the host bacterial cell, both single strands are matched up by new DNA molecules that complement the DNA bases. The plasmid becomes once again a double stranded DNA circle.

This sharing of information is very important to the survival of bacteria and is the reason medical people are so concerned about the future of antibiotics. Whole wards in hospitals have been quarantined as a result of outbreaks of resistant bacteria. Without a way to fight these bacteria people can suffer serious infections and even die.

Honey trials conducted under very strict controls at the Waikato Hospital have shown that honey of different floral sources can have an effect on resistant strains of bacteria. In a number of cases the effect has been total inhibition of growth.

This is quite exciting since it promotes possible future reasons to use some honeys as wound dressings. Cases have already been reported where the use of honey has promoted the healing of wounds which have not responded to other conventional treatments.

Honey has been used in medical situations for centuries. However, with good medical research we may see it accepted by even the most critical members of medical community.

- James Driscoll, AAO, PALMERSTON NORTH

HIVE DESTRAPPER

If you've ever come across a strapped hive on a diseaseathon, you'll know that trying to remove the plastic strapping without either breaking it or cutting it can be a tricky job.

Some beekeepers are quite adept at using the bent-over end of a Kelly hive tool to lever off the tension on the strapping buckle. Sometimes this works all right; other times it can take you as long to loosen the buckle as it takes to look at the hive. This is especially true if the strapping is fastened with one of those plastic buckles.

A number of years ago, John Foster, an enterprising beekeeper from Gisborne, invented a nifty device which does away with all this fiddling. The device, which for want of a better term we'll call a "hive destrapper", loosens any type of buckle immediately, saving the beekeeper both a bit of time and a lot of frustration.

John and his son Barry needed a quick and effective destrapper, because beekeepers in the Gisborne region have traditionally used plastic hive straps to secure their hives, which are often placed in dry stock paddocks.

Pictures and drawings of the destrapper were included in an article written by Trevor Bryant which appeared in the Autumn 1992 edition of the New Zealand Beekeeper. The device consists of a piece of 10mm steel rod bent into a crank handle, and two pieces of 15x50mm 5mm steel plate welded at a right angle on either side of the long end of the rod. The two pieces of plate form a "mouth". The strap buckle is placed in this mouth and then the rod handle is lifted. The result is a loosened strap, first time, every time.

Lots of beekeepers have shown an interest in the Foster's hive destrapper. In fact, in 1989 the destrapper won the gadget prize at the Waikato NBA field day. But not all of us are proficient welders, and so the Foster's have made a number of the destrappers for beekeepers over the years. They have recently improved the device by adding a roller handle. And they have also painted the device a bright orange, so that hopefully a certain Apicultural Advisory Officer can find the thing again when he leaves it in an orchard!

You can get your very own Foster Hive Destrapper by sending $20 + $3 postage to John and Barry Foster, 695 Aberdeen Rd, GISBORNE, phone/fax (06) 867-4591.

And From the "Believe It or Not" Department...

TURBO-CHARGED SMOKER LIGHTING

If you really want to amaze your beekeeping friends, try this the next time you fire up your smoker. Get a piece of sacking, and start it in the normal way with matches or a disposable lighter. Then hold the smoldering material up against the exhaust pipe of an idling diesel vehicle. The pressure from the exhaust will fully ignite the sacking in no time flat!

We understand that this method only works with diesel motors. If you try it on a petrol vehicle, the water vapour coming out of the exhaust will actually put the sacking out (and hopefully not blow up the vehicle!)

Thanks to Bruce Stevenson of Kerikeri for showing us this particularly novel beekeeping party trick.

BEEFAX

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IT'S NOT TOO LATE FOR AFB SAMPLES

As part of its commitment to improving control programmes for American foulbrood (AFB), the National Beekeepers' Association has requested MAF Quality Management to conduct an adult bee testing programme during the current beekeeping season.

Recent research carried out by Dr. Mark Goodwin and his team at HortResearch, Ruakura, has shown that a sample of adult bees taken from a hive can be analysed successfully for the presence of spores of Bacillus larvae, the causative organism of AFB.

This research has the potential to improve the way we currently do AFB inspections. While the presence of Bacillus larvae spores in a beehive does not mean that the hive necessarily has a clinical case of AFB, it does mean that visual inspections of hives carried out by paid inspectors can be more effectively targeted to apiaries which show at least a potential for developing clinical infections of the disease.

The NBA executive is keen to trial the spore testing method, and especially to see whether the method can be of used in it's up-coming AFB Pest Management Strategy. Last season, a provision was put into the AFB Control Programme contract to test the response rate from hobbyist beekeepers. This year, your association decided to conduct the test with commercial/semi-commercial (50+ hive) beekeepers, and included a provision in the 1996-97 contract to test 500 samples of bees from around the country.

Two hundred commercial and semi-commercial beekeepers were chosen at random to take part in this project. They were sent test kits in October, and told that the first 100 beekeepers who sent in samples would have them tested by the Ruakura lab. All testing and associated costs are being met by the NBA Disease Control Contract. Results of the tests remain confidential to the beekeeper, the lab, and the beekeeper's MAF Qual Apicultural Officers. No individual test results will be released to the NBA.

If you're one of the lucky beekeepers who were chosen to take part in this year's adult bee testing trial, you may be thinking that it's now too late to send in any bees. However, so far we have only received back and processed 29 sets of samples from beekeepers. A total of 134 hive samples have been tested, which means that we can still take samples from another 73 commercial/semi-commercial beekeepers this season.

Autumn is just as good a time to take these samples as spring, so if you have been sent a sampling packet, I would encourage you to spend a bit of time collecting bees from some of your apiaries, either when you are taking honey off, or when you do your wintering down. The sampling procedure is actually very simple, and the results you get back may give you some interesting information on the potential for AFB outbreaks in your hives. You will also be

helping your association to determine the usefulness of the bee testing technique for future AFB control programmes.

- Cliff Van Eaton, AFB Control Programme Contract Manager, TAURANGA

DO BEES SLEEP?

I'm always fascinated by the questions children ask about bees and beekeeping. There's nothing like a young, active mind to make you think twice about all the things we often take for granted in our profession. A classic example occurred not so long ago, when a friend's daughter asked the seemingly innocent question, "Do bees sleep?"

I thought about the question for awhile, and then had to confess that I really didn't know. But I promised her that I would research the topic, and what follows is the very interesting information I found.

A scientist named W. Kaiser has studied the subject, and reported in the German Zoological Journal (77:297), on experiments he conducted in 1984. Kaiser spent lots of sleepless nights (for him, at least) watching the behaviour of bees in observation hives illuminated with red light (since bees don't see red light).

He found that bees in many areas of the hive at least rested. They formed clusters, stood motionless on empty cells, and remained in a state of continuous muscle contraction. Some bees even laid on their sides. The only bees which remained active all night were those on brood combs (the ones working on the "night shift"!)

Single worker bees observed in a special chamber containing empty comb displayed similar behaviours. The only signs of life were a series of breathing movements in the abdomen, brief leg movements, and occasional brief antenna movements. At times, bees even crawled into empty cells and rested, lying on either their side or back!

Kaiser found two different resting states in bees, differentiated by how quickly the bee reacted to infrared light stimulus (how quickly they woke up?).

Kaiser didn't prove conclusively that bees slept (I'm not sure how he would have been able to do that, really). What he did do, however, was show that bees displayed a series of behaviours that we normally identify as related to sleep.

INVERMAY EXOTICS SAMPLES REDUCED

As part of the New Zealand government's surveillance programme for exotic bee diseases, beekeepers are required to collect a sample of bees from each apiary producing bulk bees or queens for export. These samples are then sent to Invermay Animal Health Laboratory in Mosgiel, where they are tested for exotic mites.

The exporter part of the programme results in approximately 500 samples from beekeepers being tested each year. As well, a further 500 samples are collected by MAF staff from apiaries in high risk areas (such as those in close proximity to ports and rubbish dumps). When the two sets of samples are added together, this means that approximately 1000 apiaries per year are inspected and tested for exotic pests and diseases. It is this surveillance programme which allows the New Zealand government to state with confidence that we do not

have honey bee pests like varroa and tracheal mite in New Zealand. The surveillance programme, which is tax payer funded, saves the beekeeping industry a considerable amount of money each year in the form of inspection and testing fees. It enables us to make "country freedom" declarations to satisfy our trading partners' concerns regarding the safety of our produce.

This season, exports of bees are expected to be considerably greater than in previous years. As a result, if we were to follow the same sampling regime as in the past, exporters and their suppliers would send us many more samples than is necessary to confidently confirm our disease-free status.

Therefore, for this season only, the number of samples required from any beekeeper producing bees/queens for export will be 1 sample from each of the first 20 apiaries used for export.

This will hopefully save time and money for some queen and bulk bee producers, while not putting our surveillance system in jeopardy.

-Ted Roberts, Apiculture Export Certification Manager, PALMERSTON NORTH

CHALKBROOD AND AFB VIGILANCE

During the spring of 1992, a Marlborough beekeeper submitted a number of chalkbrood disease samples to MAFQual for laboratory analysis, because in his opinion, "They were definitely chalkbrood mummies, but they looked a bit brown in the larval tail area".

The lab results, of course, confirmed the presence of Ascosphaera apis, the causative organism of chalkbrood. However, they also indicated that the chalkbrood mummies had a very high level of Bacillus larvae spores. The hives showed none of the classic clinical symptoms of American foulbrood disease (AFB)

Regardless, the beekeeper chose to burn the infected hive.

At the time, it was my theory that the larvae were being fed B. larvae spores by nurse bees. However, due to very high levels of A. apis spores and an ideal environment, the larvae were also being invaded by that organism as well, and the chalkbrood symptoms were showing up instead of the AFB symptoms.

My theory remained just that until 1993, when I read a report from the USDA on chalkbrood and AFB, written by Drs. Shimanuki and Knox. They stated that, " Preliminary tests demonstrate that a diffusible substance is produced by the (chalkbrood) fungus...We have named this Ascophaerin...It appears that Ascophaerin is active against other bee pathogens and organisms...including Bacillus larvae".

For the next two beekeeping years, I didn't see any further instances of high levels of chalkbrood in AFB hives. However, during the 1995/1996 season I found cases of hives struggling with chalkbrood on both the West Coast and in the Nelson area.

After lengthy inspections, flicking off dozens of cell caps, I found one or two classic "in-cell" symptoms of AFB. These symptoms included slumping and light brown colouring of larvae, through to dark, tacky, ropy larvae, and in some cases pupal infection.

When I found these hives, I became concerned that the beekeepers I was working with were generally responded with an "Oh, it's a bad case of chalk, I'll paper

it onto another hive" approach to the problem. However, if those beekeepers had carried out a longer inspection, spending up to 15 minutes of "cap flicking" (a time we would usually agree is too long to inspect one hive), it's quite possible they would have found a few cells of AFB.

The problem was that in each case there were no AFB symptoms obvious on the face of the comb -- no sunken cappings, no darkening of the cell, and no serrated holes. The only indication that anything was wrong was a drier, lighter, perhaps thinner cap. Had the beekeeper passed it off as just another " chalky" hive, my bet is that subsequent inspection checks would finally reveal a case of AFB.

This season I have seen four more cases of "subdued" AFB in heavily "chalked" hives. One had just been papered onto a strong unit and was to be relocated to a more favourable site some kilometres away.

Beekeepers should be aware of this apparent potential for AFB symptoms to be " hidden" in amongst larger, more obvious infections of chalkbrood disease. In my opinion, they should devote considerably more time to flicking caps off apparently healthy cells in "chalky" hives. If they do, they will be rewarded with an earlier detection of some AFB infected hives.

- Dave Grueber, AO, BLENHEIM

BEEKEEPING MAY GROW IN SAMOA

Beekeeping may once again start to grow in Western Samoa, thanks to the Food and Agricultural Organisation (FAO) of the United Nations. A preliminary study has now been carried out, and may result in the development of a small beekeeping industry in this Pacific island neighbour.

The FAO was approached by the former Western Samoa Minister of Agriculture, the Honourable Misa Telefoni Retzlaff, who requested a Technical Cooperation Program (TCP) for beekeeping. Mr. Retzlaff realised that beekeeping could be good for his country, both because honey is a valuable food commodity, and because beekeeping could offer productive employment opportunities for Samoans.

Murray Reid, AAO, Ruakura, and James Driscoll, AAO, Palmerston North, were contracted by the FAO to prepare an industry development plan for Western Samoa. They also carried out a bee disease survey, and conducted workshops for Western Samoan MAFF staff and trainers from that country's Ministry of Women's Affairs.

Honey bees are not new to Samoa. It is generally believed that bees were introduced at the turn of the century by missionaries, who brought with them the dark European honey bee Apis mellifera mellifera. In 1975, a New Zealander named George Kelsall began beekeeping in Samoa, and introduced the Italian honey bee, A. mellifera ligustica. Kelsall built up to 40 hives before selling out in the late '70's to what became the Samoan-American Bee Company (SABCO).

SABCO increased hive numbers to 900 by the beginning of the '80's, running 28 apiaries on the main island of Upolu. The company also built a factory, and in 1980 exported 15 tonnes of honey to Germany. Unfortunately, the company suffered a number of misadventures and folded after 1981.

In the early 90's, after 2 devastating cyclones, beekeeping in Western Samoa more or less disappeared. At present there are large numbers of feral colonies found throughout the two major islands, but there are very few live colonies left in hives.

MAF Quality Management's role, as the contract deliverer, was to develop a business plan for FAO, which would then be presented to the Samoan Government. MAF Quality Management is also likely to play a role in ensuring that the appropriate regulations are in place to protect Samoa's re-developing industry against exotic disease outbreaks.

Bee disease surveillance and agricultural quarantine will be of vital importance for Samoa when it seeks to assure trading partners about the health status of its bees and bee products. Up-to-date information will also be needed if the sanitary phytosanitary provisions of the World Trade Organisation are to be used to protect this health status.

A bee disease survey recently conducted in Western Samoa confirmed that there has been no change in the bee health status since 1987, when New Zealand MAF undertook the last bee disease survey. Indications are that Samoa has one of the healthiest bee populations in the world.

It is expected that the Western Samoan government will use the report to seek the assistance of an aid donor, and MAF Quality Management hopes to be considered as consultants should the industry development plan be adopted. At this stage, everything appears to be on track and the future looks promising for beekeeping in Western Samoa.

- James Driscoll, AAO, PALMERSTON NORTH

NO MORE SPILLS

Filling honey drums can be a pain, and each year at least one tank of honey seems to end up on the floor of somebody's honey house. Recently, Jack and Blair Dale showed me their solution to the problem when I visited their honey house in Middlemarch. No more standing over filling drums, and no more honey to meet you when you open the door!

Jack and Blair have a set of Avery scales -- the balance-type with a swinging arm and sliding weights, as found in many beekeeper's honey houses. But what is different is that these scales have a "proximity switch" (with 5mm of movement) fitted above the swing balance arm, which operates a relay. The relay in turn controls a portable Lega reversible honey pump (2000kg/hr).

To begin the process, an empty drum is put on the scale platform with both bungs removed. A clear plastic hose is attached to the large bung hole by a hose attachment screwed into the drum. The plastic hose is suspended from the ceiling with the other end attached to the outlet of the honey pump. And the inlet of the honey pump is attached to the honey tank which sits about 400 mm off the floor.

Once the hose is connected to the drum, the end weight (drum + honey) is calculated and set on the balance beam. Then the relay is turned on and Jack and Blair can leave and get on with other work.

The pump starts to fill the drum with honey. It takes 10-15 minutes, depending on temperature, to fill a 200 litre drum. When the drum is full, the weight pushes the swinging arm on the scale's balance beam up. The upward movement of the arm pushes the proximity switch, which then turns the pump off via the relay.

When the filling is complete, it is important to reverse the pump to remove the

excess honey from the hose. The drum is then removed from the scales with a drum barrow and small ramp.

Jack and Blair have also added a neat feature for taking drum samples. A small tap has been inserted into the hose just above where the hose attaches to the drum. To take a sample, a small jar is placed on top of the drum and under this tap. When the tap is opened, some of the honey being pumped into the drum is redirected into the jar as a drum sample.

One of the features of Jack and Blair's system is that each drum is filled with the same amount of honey. The filling process may be a little slower than the conventional method, but the really good part is that there is no need to stand over the drum. Filling drums becomes the job you do between other jobs. Thanks to the Dales for sharing their system with us.

-David McMillan, AAO, INVERMAY

PEOPLE-POWERED DRUM LIFTER

It seems appropriate, since we're on the subject of honey drums, to tell you about an amazing new drum lifter I saw recently. The lifter is a cross between a forklift and a Jiffy pallet truck (the kind used to move pallets of kiwifruit around sheds).

But instead of just being able to lift a full drum of honey a few centimetres off the floor, this device allows you to raise the drum 1.5 metres in the air, rotate the drum on its sideways axis, and even move it wherever you want around the honey house, all without the aid of any motor.

The device, called a Drum Lifter Rotator, is manufactured by Merton Equipment Ltd, a New Zealand company, and is used extensively in food manufacturing, or wherever heavy drums have to be moved, lifted and decanted. The device uses a clamp, similar to a truck load binder, to secure the drum. The flexible nature of the clamp has the advantage of allowing the machine to securely lift almost any shaped drum, including bent and damaged ones.

To lift a drum, you fasten the clamp, and then pump the steering handle up and down, the same way you do with a Jiffy truck. The hydraulic pump that does the lifting comes in two ratios, which means the operator doesn't have to pump the handle up and down so many times for a heavy drum.

And to rotate the drum (on its central axis), you just turn a handcrank on the self-locking 60-1 ratio gearbox. When you want to pour the contents of the drum out, you simply open the bungs and slowly crank the handle, keeping up a steady flow of the liquid as you lift the drum towards its horizontal position.

As you can imagine, to hold a drum containing 200kg of honey 1.5 metres off the ground in a horizontal position, the Lifter Rotator has to have a pair of long, heavy duty legs extending out below the drum itself. The legs are fitted with large, 200mm nylon, iron or polyurethane wheels, which allow you to move the whole machine (with the honey suspended) over fairly rough ground. In fact, you could conceivably even use it to load and unload full honey drums off of trucks, since when fully extended the arms reach out 1.3 metres.

For more information about the Drum Lifter Rotator, contact Merton Equipment, Inc., PO Box 13-111, Onehunga, AUCKLAND. Their Freephone number is 0508 636 636.

BEEFAX

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CLOVER WEEVIL UP-DATE

At the most recent Auckland NBA branch meeting, several beekeepers expressed concern over the effects of the newly introduced clover weevil on honey production. With this in mind, I contacted the AgResearch scientists studying the little beastie for the latest news.

The Clover Root Weevil (Sitona lepidus) was first identified in the Waikato in 1996. Surveys show that it has already spread into the Bay of Plenty and North Auckland. This suggests it had been around for five years or so before anyone noticed.

To date the mite has been found as far north as Wellsford, down the Waikato to Tokanui and Matamata, and from Whangamata to Te Puke on the East Coast. Strangely, there is an empty zone around South Auckland/Pukekohe. Under its own wingpower, it will probably spread up to 20 km/yr. However, a bale of hay could carry the weevil from one end of the country to the other in a matter of days. And it might also be blown across Cook Strait to the South Island, since fishing boats have already picked up the weevil at least 8 km off the New Zealand coast. A country-wide survey is currently underway to establish its present range.

The weevil is widespread throughout Europe, from Finland to Spain, although it seems to prefer warmer areas. So there is little doubt that it can survive anywhere in New Zealand.

The big question, however, is how much damage will it do? It is considered a serious clover pest in the UK, whereas in America it hasn't had much impact, despite arriving 100 years ago. This summer, clover growth was much worse than normal in the Waikato in areas where weevil numbers built up to very high levels. The researchers stress, however, that they haven't actually proved that the weevil is to blame, although it seems a logical assumption.

The weevil larvae do most of the damage, feeding on nodules and roots, while the adults tend to chew on the leaves before flying off to greener pastures. The general effect is to seriously reduce the amount of clover in a pasture mix. One trial in Ireland showed the amount of clover tripled after the weevils were controlled. No one seems to have specifically studied the impact on flowering, but it would probably reduce in line with the proportion of clover. According to one researcher I talked to, "If current outbreak areas are indicative and directly related to the weevil, the outlook for pasture-based apiculture is serious, at least in the short term and on a regional basis."

Opinions are divided as to whether the high numbers are a one-off event because of unusual weather, or something we will have to get used to. Often, pests build up to very high levels just after introduction before natural controls have a chance to build up. If our home-grown pests and predators can't cope, introducing some form of biological control is a strong possibility. Lucerne

Weevil, a close relative, is already being controlled by a parasitic wasp. On cost and environmental grounds, chemical controls are not viewed as a long-term solution. On the bright side, for once we can be sure that a problem affecting the beekeeping industry will have a strong claim on research time and dollars.

[Thanks to Ian Tarbotton, Richard Watson, Paul Addison and Barbara Barrett, all of AgResearch, for supplying information.]

- Paul Bolger, AAO, PUKEKOHE

NEW MITE DETECTION METHOD

MAF Quality Management has recently completed a successful trial of a new method for the detection of Acarapis woodi, a microscopic internal parasite commonly known as the tracheal mite. The method or test is known as an Enzyme-Linked ImmunoSorbent Assay (or ELISA for short). This type of assay is commonly used to detect the presence of many human diseases such as HIV. It is a very quick, cost-effective and accurate method of detection. A team at the Agriculture Canada Research Station at Beaverlodge, Alberta, developed the tracheal mite assay.

Female tracheal mites infest the breathing tubes (tracheae) of the honey bee. The mites pierce the tracheal wall and feed on the bees "blood" or haemolymph. The mite has a 14 day life cycle. During this cycle, eggs are laid in the main tracheal tubes. These hatch and mature and the adults mate. Mated females may then leave the tracheae to find new host bees.

Tracheal mites are found in many parts of the beekeeping world, and can have serious affects on honey bee colonies. Last year, the mite was blamed, together with the long, cold winter, for hive losses approaching 90% in some northern US states and in Canada.

Fortunately, the mite is not present in New Zealand. However, as part of the government-funded Honey Bee Exotic Disease Surveillance Programme, a large number of New Zealand hives are sampled each year for the mite. Currently, the samples are dissected by hand, a time-consuming and costly process.

The ELISA method of detection is reliable and can detect the presence of mites at a level of six infested bees per 100 bees sampled. Live, adult bees are collected and pickled in a >30% salt solution. The bees are washed before processing to remove the salt and any external mites. One hundred desalted bees are homogenized and a small filtered sample is used for the assay.

The ELISA process occurs within a small, rectangular plate containing 96 wells. The procedure has several steps including coating the plates, adding samples and various biochemicals, and performing incubations and plate washings. The final step involves a colour reaction and the "reading" of this colour intensity in an ELISA reader. A computer interprets the results and provides a printed statement of the level of infestation in the sample.

MAF conducted a trial using 88 samples of bees collected from around New Zealand. The samples were run in triplicate against both negative (no bees to test biochemicals) and positive (pickled bees from Canada containing dead mites) controls. Six samples tested as false positives (ie, the samples were dissected and shown to be free of Acarapis woodi).

Although New Zealand is free of tracheal mites, the external, nonparasitic mite Acarapis externus does occur on bees in New Zealand. It was the presence of

these mites in the six samples that gave the false positive results. To eliminate false positives caused by Acarapis externus, a better system of washing and desalting the bees has been developed.

Using the ELISA assay, we estimate that a saving of around 40% can be made on the current laboratory costs of exotic mite testing. The assay will be used as a preliminary screening technique, with full dissection of any not-negative samples. Currently, MAF Quality Management collects and tests more than 1000 samples of adult bees annually for the presence both external and internal exotic mites.

- Robert Rice, AAO, LINCOLN

NEW OPTION FOR HONEY HOUSE LICENCE

If you own a factory that processes honey or any bee product, and you currently obtain an annual licence from your local council, did you know that beginning July 1 you will be able to go on a food safety programme instead? The new law that allows this is called the Food Amendment (No. 2) 1996.

The purpose of the 29 page Act is to allow food processors to get an exemption from the need to comply with the Food Hygiene Regulations 1974, the law that says beekeepers, for instance, need an annual honey house licence.

Beekeepers will now be able to produce their own customised food processing standards, rather than have to fit into a rigid set of requirements not necessarily suitable for honey. However, you can only get an exemption by adopting an appropriate food safety programme. And, naturally, you need to document your safety programme, present it with your application for exemption, and pay a certain fee.

The Act says any food safety programme needs to meet the following requirements:

* It must be based on the principles of Hazard Analysis Critical Control Point (HACCP).

* The programme must be in writing.

* The programme must:

  - systematically identify the hazards involved in the preparation of food at the premises;

  - identify how those hazards will be monitored;

  - identify the means by which those hazards will be controlled, and provide for the systematic supervision of those controls.

* The programme must identify the food preparation tasks or categories of tasks that will be carried out, and identify, in relation to each such task or category of task:

  - the skills required to perform it;

  - the persons or categories of persons who will perform it;

  - the training and instruction necessary before the task can be performed, and any ongoing training and instruction that may be required.

* The programme must identify the regular maintenance tasks that must be carried out in relation to the premises or vehicle concerned, and in relation to any equipment used in the premises.

* The programme must provide for compliance with the programme to be audited, on a regular basis, by an approved auditor.

* Where appropriate, the programme must provide for the recall of unsafe food.

* The programme must set out appropriate record keeping requirements.

Now for the good news/bad news thing. The bad news is that some councils are making it "mandatory" to move onto the new scheme, and it may cost more initially to get your food safety programme written and accepted than it currently costs for an annual licence. One suggestion to reduce such costs might be for an organisation like the NBA to develop a generic model for honey processing.

The good news is that HACCP is a very logical and easy procedure. One group of beekeepers, plus MAF Quality Management and Telford staff have already been through a HACCP workshop. MAF Quality Management's Dairy Group are running food safety courses all the time and if there is enough interest they will run a customised one just for beekeepers.

You can contact the MAF Training Section on free phone 0800 100 205 for more information on training and courses. The most applicable courses are the Introductory Food Safety - C10 (NZQA Unit Standard 167) which covers food hygiene, food delivery and storage, food handling, cleaning and pest control. This is a one day course and costs $80 plus GST per person.

The HACCP courses (NZQA Unit Standard 169) is usually a 2 day course that covers the Codex Seven Principles of HACCP, the application of the principles, how to develop your own HACCP programme, and environmental HACCP. This workshop costs $375 plus GST per person, which is a special price until 30 June 1997. The course normally costs $550 plus GST. Some Polytechnics also run food safety courses that will no doubt meet the requirements of the new regulation.

And if you want to get your own copy of the Act, try your local Whitcoulls, or Brookers in Auckland, Wellington or Christchurch. Brookers specialise in providing access to legal and tax information and you can phone them on 0800 732 766.

While on the subject of food quality, the MAF Quality Management Dairy Group is currently negotiating with AGWEST Trade and Development to use their SQF2000 quality code. AGWEST is a business unit of the Western Australia Department of Agriculture and their SQF, or "Safe Quality Food" programme, was specially developed for small businesses involved in the food industry. It can apply to primary producers as well as small food processors. We'll give you more details on SQF2000 in an upcoming issue of BeeFax.

- Murray Reid, AAO, HAMILTON

HIVE LOSSES AND SPLITS

For those of you currently wintering down your hives, here's a timely comment from Alan Dick, a commercial beekeeper in Alberta, Canada, which recently

appeared on BEE-L, the Internet beekeeping bulletin board. Mr. Dick had just done a survey of winter losses on his own hives. As an aside, the hives were mostly headed by New Zealand or Australian queens:

"An interesting thing about mathematics is that the truth is not always obvious and intuitive. This is particularly true when you consider the relationship between the size of hive loss over winter and the cost of recovering from it in the spring:

If you lose 10% of your hives, you have to split 11% of your colonies to recover;

If you lose 20%, you have to split 25%;

If you lose 25%, the number is 33%;

But if you lose 33%, half (50%)must be split;

And when you have 50% loss, every hive (100%) has to be split

... just to get you back to where you started!"

BLOOD AND BEES

"Be nice to me...I gave blood today." But should you have? Well, it turns out bee stings and blood don't mix.

Whether you are young or old, or even hate needles, you should consider being a blood donor. Generally, any normal healthy person over 55 kg in weight and aged between 16 and 65 can give blood. However, the Blood Bank will not take blood when it considers there is a risk, either to the donor, or to the patient who will eventually receive the blood or blood product.

And, of course, the reason to give blood is that it's likely that at some stage in your life you will need either blood or a blood product yourself. Some of us may need a whole blood transfusion as a result of an accident, illness or an operation. More often, however, we may need a blood product, like an immune serum globulin for protection against hepatitis when travelling overseas.

However, as beekeepers we need to be aware that there is a minimum period of three days between our last bee sting and when we should give blood. The reason is simple -- if we give blood in a shorter time period, and the blood is administered as a transfusion to a person who has a generalised allergic reaction to bee stings, the venom remaining in the blood could cause serious complications for the patient.

To be on the safe side, the next time you give blood, make sure you tell the nurse that you're a beekeeper. And remember the 3 day rule!

- James Driscoll, AAO, PALMERSTON NORTH

GADGETS AND GISMOS

(This month: Murray Reid tells us about labels, bar codes and the IRD)

Polysleve Labelling/Convex Plastics

As the name suggests, these stretch polysleves can be used on plastic bottles and containers of all sizes. They require no heat or glue and you get full wrap-around graphics in up to six colours. They are also recyclable. And if stock is damaged, or if the label is damaged but the stock is okay, then a new label can be easily fitted.

Call Graeme or Hamish on 09 525 1010 for more details or you can E-mail Convex at: convexmh@inca.co.nz.

[Source: Food Business, June 1996]

Tax Rules Change on April 1

If you run a business or are GST registered you need to be aware that the laws on tax compliance and penalties are changing. Whether you are a sole trader or a large employer, you need to know how the changes will affect you. Call your local Inland Revenue office and ask for a copy of their booklet "Taxpayer Obligations, Interest and Penalties - A Short Guide to the New Rules for Business People" (IR240). It may pay to have your IRD number handy.

Bar Codes

Supermarkets have moved towards requiring EAN-128 bar codes on cartons as well as jar labels. Bar codes and "use by date" can be printed to a label and applied to the carton, or printed on the carton itself. A number of companies offer expertise in bar code printers, including:

Reynolds Group Ltd

All-Mark Industries

Bar Code Systems (NZ) Ltd

Arrow Labels

William Brandt Technology

[Source: Food Business, June 1996]

TAMPER-PROOF LIDS FOR PET JARS

According to Rick Tupou, Marketing Manager at Nexus Packaging Systems in Auckland, by the end of the year his company will be able to supply their popular 250g and 500g polyethylene terephthalate (PET) honey jars with tamper-proof lids. The lid will look similar to the lid now seen on the PET Sanitarium peanut butter jars. It has a conventional screw lid attached to a break-away bottom collar (the same system used on PET soft drink bottle caps).

The design requires a new mould for both the lid and the jar itself, and since PET moulds cost hundreds of thousands of dollars, the lid is being offered first on high-volume lines like the peanut butter jar. New moulds are scheduled, however, for lower volume lines like the honey jars.

The recent Arnott's food ransom scare in Australia has highlighted the vulnerability of food packaging to sabotage and extortion. Last August, during a visit to the Honey Corporation of Australia, I was told that the Australian federal government was requiring tamper-proof packaging throughout their food industry because of fears of such sabotage.

EMERGENCY FEEDERS

A recent posting to the BEE-L Internet bulletin board described an interesting method of feeding sugar syrup to honey bee colonies using zip-lock plastic bags. The authors were two long-time beekeepers, who initially dismissed the idea, since they had heard of several "catastrophes" over the years with similar feeders leaking and drowning out a colony. However, those were just normal plastic bags, and so the beekeepers tried the method again, this time using thicker gauge gallon zip-locks.

They found that the bags held syrup extremely well, even with a slit on the top. According to one beekeeper, "The bags allowed for the most rapid taking up of syrup I've ever seen. I filled gallon bags a bit over half full, and they were cleaned out in a day."

The secret seems to be using the right size bag for the amount of syrup fed (no more than 3/4's full), and making sure the feeder slit in the bag isn't too long. A razor blade makes a good, clean, controlled slit once the bag has been placed on the top bars.

Needless to say, however, to make feeder bags work successfully, you'd need an over-sized inner cover, or a empty super put on top of the brood nest so that the syrup-filled bag doesn't get squashed. Still, it sounds like a good idea for feeding, especially in emergency situations where a beekeeper doesn't have a frame feeder to do the job.

BEEFAX

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SAWFLY UPDATE

"Willow" is not a word that normally appears on honey jars in New Zealand supermarkets. However, for honey bee colonies the various willows (Salix spp) provide vital nectar and pollen for spring build-up. Recently I've been asked by a number of beekeepers about the potential affects of the newly discovered willow sawfly on this all-important feed source. So here's an update on the pest.

The willow sawfly (Nematus oligospilus) was first found in suburban Auckland in February of this year. A survey by MAFQual showed that it was already widespread throughout the Auckland city area, which made successful eradication unlikely. So far, the only confirmed find outside Auckland is from Rotorua. It is hoped that a survey next spring will give a clearer picture of sawfly distribution.

The natural range of the sawfly is from western Europe to the Himalayas, where it tolerates a wide variety of climatic conditions. It has also become established in the UK, North America and, more recently, southern Africa. Concerns in New Zealand are largely based on the South African experience, where severe damage to willow plantings occurred within a few of years of sawfly establishment.

Little is known of the life cycle of the pest in New Zealand, although so far all specimens found have been female. Females can reproduce without mating, in much the same way as queen bees produce drones. The sawfly overwinters as a late-stage larva inside the pupal cocoon, pupates in spring, and emerges as an adult two weeks later.

Egg laying begins almost immediately. The eggs develop into greenish caterpillar-like larvae similar to those of the white cabbage butterfly. The larvae are specific to willows in their feeding, although they have been recorded as moving on to nearby poplars when all available willows have been stripped.

Given that most willows flower early, the actual temperature that triggers emergence could be crucial for beekeepers. It seems likely that sawfly numbers will not build up to significant levels before flowering. However, that may make little difference if the willow is so severely damaged the previous summer that it doesn't flower the next spring anyway.

How much effort should go into controlling the sawfly? DOC, and some regional councils with blocked waterways view willows as a nuisance weed. The opposing view (held by most beekeepers) is that the benefits provided by willows, including shelter, stabilisation and amenity uses outweigh their disadvantages. The latter view seems to be winning out, and the possibility of introducing a biological control agent from Europe is now being considered. Several parasitic

wasps are known to attack the sawfly, although any introduction will probably be several seasons away.

[Sources: Dr. Jocelyn Cowley, MAF Qual, Lynfield; Dr. Jo Berry, Landcare Research, Mt. Albert]

- Paul Bolger, AAO, PUKEKOHE

CHANGES TO EC EXPORTS LIKELY

Over recent years, the pressure to free up international trade and reduce tariffs has increased significantly. Tariff barriers have been removed. But at the same time more regulations have appeared with the stated purpose of protecting the importing country from pests and diseases.

In many cases it can be argued that the regulations have been thinly disguised replacements for the previous tariff barrier, as for example when a country which already has a particular endemic disease which is not subject to any reporting or control insists that imports should be free from that disease. New Zealand exporters are only too familiar with these problems.

The SPS agreement, which came out of the most recent GATT round of trade negotiations, has set the ground rules for the use of sanitary or phytosanitary (SPS) requirements so that they do not become unjustified barriers to trade. Our beekeeping industry has already seen some changes to requirements as countries review what is justifiable under the new rules. We can expect to see more in the future.

The European Community is currently reviewing its requirements for a wide range of animal products. Among these are apicultural products, which are defined as "honey, beeswax, royal jelly, propolis or pollen, not intended for human consumption or industrial use" [EC directive 92/118EEC Article 2 1.(g) - also known as the "Balai" directive]. Further on in the directive it is explained that 'not intended for human consumption or industrial use' means "products intended for use in apiculture".

Does this make it all clear? Not really. Take beeswax, for example. While it is obvious that foundation sheets exported to a bee supplies company would come under this category, what would be the situation for crude beeswax exported to a European trader? Often the exporter does not know whether this wax is going to be made into foundation or lipstick!

One can argue that whatever it ends up as, it is being exported for industrial use and is therefore excluded from these provisions. Whether this argument is accepted or not depends ultimately on the interpretation placed on the directive by officials in importing member countries of the EC (consider the current disagreement over whether spreadable butter is butter).

One of the major planks likely to underpin all of these new regulations will be the requirement to trace product back to its origin, and to make statements about the disease status of the apiaries of origin. Beekeepers involved in exports of honey to Germany will know all about this already.

It is therefore highly desirable that all beekeepers who wish to export product in the future develop good systems of inventory control and batch identification. This means being able to prove to an importing country, for instance, that drum 97/31 came from apiary number 56 and was indeed from the 1997 crop. While this may seem easy for honey, consider the problems in

tracing beeswax for manufacture into foundation.

Many beekeepers (eg, organic honey producers) already have such traceback systems in place. For some, however, major changes to extraction procedures and record keeping will be required to ensure that access to major export markets is available in the future. Those who are not sure how to set up suitable systems should consult either their regular exporter or AAO for guidance.

- Ted Roberts, Apiculture Export Certification Manager, PALMERSTON NORTH

PLUG THOSE GAPS

Many beekeepers, and most queen bee producers, use one super hives containing multiple nucleus colonies. The advantages of using multiple nucleus hives are many and include a) reduced apiary size for the number of colonies present, b) time-saving when putting out cells, catching queens and balancing colonies with bees and brood, and c) savings in the amount of equipment required to establish nucs.

The advantages of the multiple nucs certainly out-weigh the disadvantages, but there is one particular pitfall to consider. This article looks at that problem and its solution. The solution may seem simple, but finding the cause can sometimes be the hard part.

How often have you gone to a multi-nuc hive expecting to find a queen in nearly every nuc, but instead find that many of the nucs are queenless? The box contains two or three nucleus colonies, for instance, but only has one mated queen. You then spend a lot of time and energy balancing the nucs with bees and brood only to go back the next time and find the same result.

In my experience, this situation is less common in summer and in good weather than in early spring or when the weather is unsettled. Quite often the beekeeper will put the result down to a bad batch of queen cells, or the cells becoming chilled before they were put into the nucs, or perhaps bad weather and poor matings.

As it turns out, however, a major cause of this decline in queen production in multiple nucs stems from the equipment itself, and the instinct of bees to communicate. To explain why, we need to first understand a little bit about how bees communicate and in particular the role pheromones play in this communication.

Pheromones (or chemical messengers) play a crucial role in the honey bee colony. Pheromones are perceived by specialized sensory cells in bees called chemoreceptors and are detected as odour or taste. Pheromones exert their control over insects (and animals) in both subtle ways, such as physiological development, and in obvious ways, such as behaviour.

The pheromone (E)-9-oxo-2-decenoic acid (9-ODA) is reported to inhibit both ovarian development of workers and queen rearing by workers. Another pheromone, (E)-9-Hydroxy-2-decenoic acid (9-HDA), produced by the queen, is reported to work in conjunction with 9-ODA in suppressing queen rearing. However, the presence of a mated queen is more effective than the presence of both 9-ODA and 9-HDA in suppressing queen rearing, which indicates that additional pheromones are involved in this suppression. Whatever the chemicals involved, it's obvious that mated queens, by the production and release of pheromones, suppress queen rearing within the colony.

But how does this relate to losses in queen bee production in multiple nucs? The point of multiple nucs is to separate a large box into multiple compartments by means of a division board, with each compartment containing a separate colony. But how separate are your colonies and are the division boards pheromone and bee-proof? If they are not absolutely separate in terms of pheromone transmission, then each colony will be affected by the pheromone influence of the adjacent colonies. You should check (in particular) the corners where your division board touches the floor board, and around the edges where the lid touches the division board. If any gaps are present, then you do not have totally separate colonies.

Pheromones can travel from one colony to the next through gaps, even if the gap is only the thickness of a piece of paper. Pheromones are effective even in very low concentrations and can travel through those gaps either via air circulation or bees touching tongues through the gaps. This may result in a drastic and sudden drop in queen production.

In the summer, the effect of pheromone transmission through gaps is minimal. Only when conditions (weather and nutrition) decline, does the problem of gaps really become obvious. Anyone who has run two-queen hives in which a queen excluder separates the queens (as opposed to two-queen hives containing two colonies separated by a division board) will know that as conditions decline the colony is likely to revert to one queen.

The same holds true for nucleus colonies separated by a division board. If gaps at the edges of the division board are present, pheromones may be transmitted between the nucleus colonies, which inevitably results in the loss of queens in adjoining nucs.

A simple solution exists for the problem of gaps. Two products, windscreen sealant and silicon, are extremely useful in sealing these gaps. They seal the gaps while allowing movement (contraction and expansion of the joints). They also don't act as an adhesive, so they still allow easy removal of the division board if necessary. It is important, however, that these materials are applied while the colony is empty as the bees will remove the sealant if it has not cured.

- Robert Rice, AAO, LINCOLN

GADGETS AND GISMOS

[This month: Murray Reid tells us about a nifty way to cut up smoker fuel, and ways to cut costs in the home office, too]

Impact Wrench Kit

You may or may not be a fan of The Warehouse, but they stock a product that looks more than useful. It's an impact driver that should make easy work of taking the nuts off a car wheel. The unit comes with a light, achieves 130 ft/lb torque (whatever that means in practice) and has 4 different sized sockets. Oh, and you also get a pair of gloves, too. Not bad for $89.99 retail!

No More Missed Faxes

Don't you just hate it when you are trying to send a fax and it won't go through because the machine is busy or out of paper. It always seems to happen when you have to go somewhere and can't hang around to redial, and who hasn't

had their own machine run out of paper? Do you know how many faxes you may have missed?

Well, Telecom may have the solution for you. They call it Fax Advantage and introduced it last year. Fax Advantage diverts faxes to Telecom's Message Exchange when a customer's line is busy or there is no answer. The Message Exchange stores the fax, then resends the fax every five minutes for the next 30 minutes.

After half an hour, Message Exchange continues to send your fax at regular intervals for up to five hours or some other time frame chosen by you. If there is still no joy, Message Exchange will notify you by phone or pager. Message Exchange can hold and deliver free up to 30 pages from its memory, with a 9 cents/page fee (excluding GST) after that.

A normal fax line costs $60 per month to rent. Fax Advantage costs $69.42 - so for an extra $9.42 you should never miss a fax or have the hassle of trying to connect to another faulty or engaged fax machine.

Cutting Sacks for Smoker Fuel

Most beekeepers still seem to be able to find old sacks or scrim to burn in their smokers. However, cutting the sacking into "burn-sized" pieces is a universal chore. I've used an axe and chopping block, knives and scissors, sheep shears (blade type) and even the circular saw. The saw worked fine, but would give OSH a coronary, and was very dusty. I even turned the blade around and that worked okay too - still dusty, but at least it didn't grab the sack so violently.

However, the neatest and cleanest method has to be that used by a local Waikato beekeeper. He uses a saw bench with a smooth blade called a knife edge blade. You will have to get these from a specialist saw doctor. The trick with these is to:

* Keep the blade sharp with a Carborundum stone

* Don't fold the sack too thick - one fold is enough

* Use a hand tool like a cement float to push the sack past the blade (this is essentially a flat piece of wood with a handle)

The float must be made of wood. Gluing a thick piece of very rough sandpaper on the bottom will help it grip to the sack better. Or you could paint or varnish it and dust with sand while still wet. You need to hold the float very close to the blade and push quite hard to keep the sack compressed down and moving past the blade. Another advantage of the knife edge blade is that there is little dust and sack fluff to get all over the workshop or up your nose. Like all saws, you should use a safety guard and protection for your ears and eyes.

Printer Ink Cartridge Refills

Who hasn't been shocked when it comes time to renew the ink cartridge in your computer or fax printer. "What do you mean, $45 for that little thing!" Prices for new cartridges do seem to be coming down, but it's much cheaper to get them refilled or even do it yourself. I seem to get 3-5 refills from an HP cartridge before it wears out.

I use Cartridge Refills Limited, PO Box 391, Waikanae, phone 0800 241 212.

Murray and Eleanor Hopping run Cartridge Refills and offer a very good service. They can clean and refill your cartridges for about $32 for most Canons and Epsoms, and $37-45 for HPs. They give you a test report on each cartridge, too. Colours are no problem and cost around $20-35 per colour. Their prices include GST, packaging and courier back to you and a courier bag to send in your next cartridge. They can service all the main brands of printer apart from those mentioned above.

Refills for "do-it-yourselfers" cost around $25-$30 for Cannons and Epsoms, and $32-$40 for HPs. The kits include 40-70 ml of ink, head cleaning solution and a syringe to fill the cartridge, plus instructions. I seem to get around three refills from the refill kit for an HP51626A.

Tamper-Evident Caps

Further to the article on tamper-evident tops for jars in the March 1997 issue of BeeFax, Spotless Plastics NZ Ltd now offer tamper-evident caps for 28 and 38 mm containers. There are screw-on or push-on models and they are plug sealed. The tops are also available plain or printed with a wide range of colours and inks. Spotless Plastics are at 30 O'Rorke Rd, Penrose, Auckland, free phone 0800 242-648 or ph 09 579-0934 fax 579-7167.

RETAIL HONEY PRICES SURVEY

In response to readers telling us that they would like to see more market information in BeeFax, last year we began an on-going survey of supermarket prices . Each AAO around the country visits two supermarkets and records the retail price of a 500g pot in whatever form (liquid, creamed and squeeze) for three categories (clover blend, bush blend and manuka). The results are averaged and presented along with the range (lowest and highest prices).

We hope you will find this information useful in your own beekeeping businesses. Remember, though, that the prices listed are only indicative, and do not necessarily represent the average situation for all retailers in any given area.

The survey will be repeated in the August and December issues. What follows are this month's survey figures, as reported on 29 April: '

Centre	Clover/Blend Ave/Range	Bush Blend Ave/Range	Manuka Ave/Range
Whangarei	$2.67/$2.46-$3.30	$2.43/$2.19-$2.65	$4.66/$3.69-$6.65
Auckland	$2.86/$2.27-$4.08	$2.68/$3.25-$2.33	$4.79/$3.15-$7.95
Hamilton	$2.82/$2.07-$3.43	$3.33/$3.33-$3.33	$4.25/$3.79-$4.62
Tauranga	$2.83/$2.25-$3.82	$3.18/$2.36-$4.66	$4.93/$3.75-$7.02
Palmerston N.	$3.03/$2.29-$3.78	$2.69/$2.51-$2.99	$4.76/$3.66-$7.89
Blenheim	$2.83/$3.35-$2.59	$2.96/$2.40-$4.40	$5.22/$4.25-$7.75
Christchurch	$2.96/$2.39-$3.55	$2.83/$2.29-$4.30	$4.09/$5.55-$7.75
Dunedin	$2.71/$2.20-$3.06	$3.25/$3.25-$3.25	$4.47/$3.95-$5.55
Average	$2.84 (500g)	$2.92 (500g)	$4.65 (500g)
(April 1996)	($2.48)	($2.63)	($4.56)

Next Month: MAF Qual's New Zealand Honey Crop Estimate

BEEFAX

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1997 HONEY CROP

As we promised in last month's BeeFax, here is MAF Quality Management's New Zealand honey crop estimate for 1997.

The information is summarised in the table below. The total New Zealand crop is estimated at 8537 tonnes, virtually identical (-0.8% change) to last year's crop of 8610 tonnes. This year's crop is 4.6% less than the rolling six year average of 8943 tonnes, and significantly less than the record 1994 crop of 11819 tonnes.

While this year's crop is once again average, and similar in total to last year' s crop, compared to last year there were big differences in production in several parts of the country. Most obvious was the increase in production in the Canterbury Apiary District (including South Canterbury and North Otago), where the crop is 82% up on last year. And on the West Coast, good summer weather resulted in crops of 6 tonnes/100 and more, which increased the total crop in the Blenheim Apiary District (including Marlborough and Nelson) by one third.

The biggest reduction, compared to last year, was in the Hamilton Apiary District (Waikato, King Country and Taupo), where wet conditions during summer and excessive grass growth resulted in a drop in production of almost one half.

Taking these changes into account, the result was a swap in production between the two islands, with the North Island dropping from 4912 tonnes to 3640 tonnes, and the South Island increasing from 3698 tonnes to 4897 tonnes.

The average production per hive throughout the country this year was 29.5kg/ hive, 1.6% less than last year. The difference in percentage decreases between tonnes and kgs/hive reflects the fact that there was a significant increase in numbers of registered hives reported to MAF by beekeepers in 1996-97.

For those of you who are interested in the mechanics, the MAF Quality Management honey crop survey is carried out in May of each year. Apicultural Advisory Officers in each Apiary District print out a list of all beekeepers with 250 hives or more, and then contact enough of those beekeepers to get production information for at least 50% of the hives in the District. The figures each beekeeper supplies are kept strictly confidential, and are destroyed once the survey is completed.

Because most Apiary Districts have several distinct climatic zones (Invermay, for example, includes both Southland and Central Otago), the beekeeper reports are grouped by area. A figure for total hive holdings for the area is then calculated, and kgs/hive averages from the beekeeper reports are multiplied by the total number of hives in the area to come up with a final crop figure (in tonnes).

Because not every beekeeper in the country is surveyed, the final figures are not absolutely accurate. However, we do believe that they give a very good picture of the amount of honey produced in New Zealand each year.

The honey crop estimate has been carried out by the Ministry of Agriculture for many years. The figures are used by honey packers and exporters, and appear each year in the New Zealand Year Book, published by Statistics New Zealand. We understand they even make their way into the world honey production database run by the Food and Agriculture Organisation of the UN.

The annual honey crop estimate is carried out by MAF Quality Management as a complimentary (free of charge) service to the New Zealand beekeeping industry.

AUSTRALIAN IMPORTS CHANGE LIKELY

The Australian Quarantine and Inspection Service (AQIS) has announced that changes are pending to their requirements for the importation of honey and apiary products from New Zealand to Australia.

The changes being suggested are essentially that import permits for New Zealand bee products will not be required except for the following:

Honey and apiary products being imported directly into Western Australia (which is still free from chalkbrood)

Comb honey (and honey containing comb honey)

Pollen

Beeswax

The proposed changes have already been circulated to the NBA's Export Committee for comment. Dr. Jim Edwards of the MAF Regulatory Authority will be relaying any comments back to AQIS in early June.

MAF Qual Export Certifying Officers will be advised once the changes are in place and will communicate directly with current exporters who have conformity certification agreements for export of honey to Australia, making them aware that heat treatment and testing for chalkbrood will no longer be required.

However, until the changes are officially notified by AQIS, the current system of conformity certification and heat treatment remains in place.

- Ted Roberts, Apiculture Export Certification Manager, PALMERSTON NORTH

BANKING QUEENS

Queen producers often find themselves in a situation where the number of queens produced exceeds the number of queens being dispatched to customers. They then need to find a means of holding queens until required. If you have to hold queens for more than a couple of days, then the queens should be stored in a hive. Storing queens in this fashion is usually called "banking queens", and the hives are called "queen banks".

Queens can usually be stored in banks for up to 28 days without significant losses (deaths), or detriment to the queens (physical damage such as loss of legs, etc.) In a strong hive, you should be able to bank up to 96 queens.

A bank hive should contain a young (current season) queen and be located in an area with an abundant supply of high quality pollen. Nectar sources, while less important, should be plentiful; otherwise, the hive will require supplemental sugar feeding. The colony should also be gentle in nature.

Successful banking of queens is dependant on having plenty of young, healthy bees in the bank hive. These bees must have access to the high quality pollen and nectar mentioned above because they need to produce royal jelly, which they in turn feed to the banked queens.

The banking frame itself is usually about the same size as a normal frame, with the cages held back to back in two rows and the gauze (wire) of the cages facing outwards. The cages are stacked vertically in the frame. Always use clean cages, with the gauze intact. Never use cages containing candy, and never put attendants in with the queens. Make or cover the cages in such a way that about 1/3 of the gauze of each cage is accessible to the bees in the bank hive.

The steps in preparing a bank hive, using 10 frame Langstroth equipment, are: -

1) Choose a gentle, three story hive with a young queen.

2) Find the queen.

3) Choose three frames of light-coloured, sealed brood that is about to hatch, and set aside.

4) Assemble the bottom brood box so that the outside frames are honey/pollen, followed by two frames of brood each, then one fresh (unlaid) brood comb each, and finally two frames of brood in the centre. The total should be 10 frames.

5) Return the queen to this box and cover it with an excluder.

6) Place the honey super (top box) over the excluder and arrange the combs so that the three frames of brood you set aside are in the centre of the super, and are separated by little more than a frame width. The total frames in this box should be 7.

7) Place a queen bank in each gap between the frames of brood.

8) Place a third box of honey over the second box. The third box provides additional storage capacity for the hive and helps with temperature regulation.

9) At this point it pays to give the bees a feed of sugar syrup (two litres of 35% sugar is best).

The hive should be worked every 10 days, with more brood lifted up from the brood nest and placed on either side of the banked queens. Also, since bank hives tend to lose their queens more readily than other hives, when working the hive you need to always check for the presence of a laying queen. With all those queens banked in the hive, if the hive does become queenless, it won't raise its own replacement queen.

It also pays not to add queens to a queen bank once it has been made up. The balance of queen pheromones in the banking hive seems to be an important factor in maintaining colony cohesion. When new queens are added, this sometimes can disrupt the balance and cohesion, resulting in less food being made available to the queens and eventually queen losses.

- Robert Rice, AAO, LINCOLN

APIARY LEVY CATCH 22

With the change to an apiary-based levy for financing the affairs of the NBA, I am aware that some beekeepers are currently considering schemes to reduce their number of leviable apiaries. While apiary numbers and NBA levies are not the business of MAF Quality Management, as Apiculture Export Certification Manager I do feel the need to point out some of the possible consequences relating to export certification so that all the facts are available and a sound decision on apiary ownership can be made. The first scheme which has come to my attention is the sharing out of two or three apiaries to each member of the family. This could possibly save a beekeeper up to $200 per annum in levies paid. However, once those apiaries are transferred to another party, as far as the Apiaries Act is concerned they are no longer part of the original owner's holdings. This could cause problems in obtaining clearances for export of honey, say to Germany, where honey from those apiaries cannot be separately identified. It will also be necessary, in all such cases, for each beekeeper to apply separately for clearance (and incur separate certification charges). The second scheme being mooted is for beekeepers to de-register all seasonal sites, say in May, and re-register them again in July. This practice would obviously leave the beekeeper in a crowded area open to claim-jumping by neighbouring beekeepers willing to pay for expansion! It could also have a more serious consequence, particularly for those who wish to export bees.

One part of the OIE Code relating to trade in bees can be paraphrased "that the apiary of origin of the bees has been under the direct supervision of the Veterinary Authorities for a period of at least 2 years". It would appear to me that an apiary must, at the very least, have been registered for two years in order to qualify as being under supervision. This requirement currently applies to several countries, including Korea, and can be expected to apply to more in the future as countries move to align their import policies with the OIE Code.

The moral of the story is that re-organising the business to save on the levy could end up costing more in lost marketing opportunities, or more in expensive apiary clearances!

- Ted Roberts, Apiculture Export Certification Manager, PALMERSTON NORTH

BEEKEEPING IN CELLULOID

Recently, New Zealanders were "treated" to a spectacularly bad movie on TV2 about Africanised bees. There have been a number of similar films produced over the years, and they all work to the same formula:- play on the public's inherent fear of honey bees as stinging insects, and then disregard all the science and practice of beekeeping to try to make people believe that bees are some kind of malevolent creature, bent on destruction of the human race.

I've often wondered if Hollywood would ever try to balance such stories, at least a little bit, and portray bees and beekeepers for what they really are -- a significant part of agriculture which has played an important role in human history. I guess there just isn't any drama in that sort of thing.

Or so I thought! Recently, the beekeeping press in America has been full of stories about a new movie, called "Ulee's Gold". The movie stars Peter Fonda,

and according to one account, "celebrates and illuminates the life of a beekeeper", in a drama about the beekeeper's struggles to hand on his craft to the next generation.

The movie has gained so much attention, in fact, that the Florida State Beekeepers' Association has named Ulee Jackson, the fictional beekeeper hero, as Florida's Beekeeper of the Year. At the ceremony, the Florida State Deputy Commissioner of Agriculture, Mr. Carl Carpenter said that, "Thanks to the movies, there are many fictional characters who have become part of popular culture. Many times people learn as much from movies and television as they do from school. Generations of beekeepers who have cultivated bees, harvested honey and contributed so much to Florida are a real mystery to most of us. Probably Ulee Jackson will change all that. Beekeeping is not just a profession -- it's a way of life. It takes patience, dedication, and a true love of what you do. In this day and age, that life seems more fiction than fact."

Peter Fonda attended the Florida state beekeepers' convention, and accepted the award on behalf of the film's producers, Orion Pictures. Interestingly, Peter's more famous actor father Henry, was for many years a keen hobbyist beekeeper, keeping beehives in Beverly Hills.

[Source: Bee Culture, January 1997]

BEE PRODUCTS BOOK

An interesting new book on bee products has recently been published by the Food and Agriculture Organisation (FAO) of the UN. The book (Value Added Products from Beekeeping by R. Krell, FAO Agricultural Services Bulletin: Paperback #124, 409 pp.), starts where many other bee text books leave off.

The stated purpose of the bulletin is to "introduce beekeepers, people considering beekeeping, and those interested in processing and marketing, to the large diversity of products that can be derived from beekeeping for income generation."

The book certainly does that, and in a very readable and reasonable way. It describes honey, pollen, wax, propolis, royal jelly, venom and adult and larval honey bees. It provides information on history, chemistry and composition, product quality, production, market opportunities and recipes. The author reviews the literature for each product, but is careful in his choice of papers, especially when discussing therapeutic properties.

The book is ideally suited to developing countries, or to people who want to start out processing and marketing bee products in a small way. It is not a complete manual and does not go into production methods in any great detail. For example, there are no plans for pollen traps or instructions on how to use them. However, the book is very well illustrated so at least readers know what a pollen trap looks like.

Prices quoted for raw products may also be of limited value because only a few countries are surveyed and commodity prices for bee products can change rapidly. The book provides a detailed bibliography of over 500 references (mostly post-1970), a list of equipment suppliers and the Codex Alimentarius (international) standards for honey.

You can get this bulletin at cost through the International Bee Research Association (IBRA). The New Zealand IBRA representative is Cliff Van Eaton,

MAF Qual, Private Bag, Tauranga. Based on the current £/NZ$ cross-rate, expect to pay about NZ$75 including postage and packaging.

- Murray Reid, AAO, HAMILTON

BEE DISEASES HANDBOOK

While we're on the subject of bee books, we've recently obtained 50 copies of the newest edition of Honey Bee Diseases & Pests, an excellent publication put out by the Canadian Association of Professional Apiculturists.

The pamphlet, which is 26 pages long, has clear colour photos of all the major bee diseases, including many (such as varroa, EFB and tracheal mite) which are currently not present in New Zealand. The pamphlet also includes information on diagnosis and control, although it should be noted that all the drugs recommended in the text (except fumagillin) are illegal to use on honey bees in New Zealand.

The pamphlet replaces the very popular first edition of Honey Bee Diseases & Pests, and includes more information on both varroa and tracheal mite, two diseases which are now causing serious problems for beekeepers throughout North America.

If you would like a copy of the new edition of Honey Bee Diseases & Pests, send a cheque made out to MAF Quality Management for $5 to Cliff Van Eaton, MAF Qual, Private Bag, TAURANGA. Make sure to include your return address.

ANNUAL NEW ZEALAND HONEY PRODUCTION, IN TONNES AS AT 30 JUNE ANNUALLY

	1992	1993	1994	1995	1996	1997	6yr Avg
Northland, Auckland, Hauraki Plains	1200	1033	1295	354	829	766	913
Waikato, King Country, Taupo	1068	811	1946	962	1639	829	1209
Bay of Plenty, Coromandel, Poverty Bay	998	958	1524	1426	1077	933	1153
Hawkes Bay, Taranaki, Manawatu, Wairarapa	1231	577	1442	1200	1367	1112	1155
NORTH ISLAND	4497	3379	6207	3942	4912	3640	4430
Marlborough,Nelson, Westland	650	560	493	499	607	919	621
Canterbury*, North Otago	2870	1611	2883	1685	1287	2339	2113
South & Central Otago, Southland	1543	1536	2236	1921	1804	1639	1780

SOUTH ISLAND	5063	3707	5612	4105	3698	4897	4514
NEW ZEALAND	9560	7086	11819	8047	8610	8537	8943
Yield per hive (kgs)**	31.4	23.3	40.8	27.5	30.0	29.5	30.4

* Includes honeydew

** Total estimated production available for extraction divided by total registered hives

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BEEFAX

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HONEY STANDARDS HERE AND THERE

Last week I received a letter from a PhD student at the University of Hong Kong who is studying quality evaluation of honey. The student asked me to supply him with a copy of New Zealand's regulations relating to honey standards.

A couple of days later, I was told that the UN Commission on Food Standards (called the Codex Alimentarius Commission) was having a meeting in Switzerland at the end of June to consider a draft revised standard for sugars and honey.

In coming up with a reply to the student's enquiry, I did some investigation into New Zealand's honey standards. At the same time I had a look at the proposed Codex standards for honey. What follows is a comparison of those two standards, which may be of use to beekeepers here in New Zealand who are currently discussing the need for improved honey standards of our own.

First a bit of background. The Codex Alimentarius Commission was jointly organised in 1962 by the Food and Agriculture Organisation (FAO) and the World Health Organisation (WHO) as a means of producing international food standards on both a worldwide and a regional basis.

Efforts to attain a worldwide standard for honey began at the outset of the commission. The Codex Alimentarius standard for honey was first adopted by the commission as a recommended world standard for honey in 1987. This followed a long period of regional standard setting, especially in Europe where a European Community Codex honey standard was drafted in 1968.

The Codex Alimentarius standard is only a recommended standard, however. Countries have been encouraged by the UN to adopt the standard in their own countries, and for international trade. However, many countries have been reluctant to bring their own country standards into line, as in the case of the US and the European Community. The current revised draft Codex standard is an attempt to "harmonise", or bring into line, the international standard with other existing standards.

What gives more urgency to the exercise, however, is the freeing up of trade under the World Trade Organisation (WTO). If a country has a honey standard which is radically out of step with world standards, this could be seen as a non-tariff trade barrier and a case could be brought under the WTO.

The current draft revised Codex standard covers the following areas:

Honey definition - Honey is defined as a natural sweet substance produced by honey bees from nectar of plants or from secretions of living parts of plants or excretions of plant-sucking insects living on parts of plants (ie, honeydew).

Honey description - The standard states that honey consists "essentially" of different types of sugars (such as fructose and glucose), but also

significantly mentions other substances such as organic acids, enzymes and solid particles derived from honey collection. This last part is an addition to the previous standard, and is important because it helps to differentiate honey in food standards from other sugars.

Additives - The standard says that honey shall not contain any added food ingredients or other substances, and that it shall not have any objectionable flavours, aromas, or taints from foreign matter or from fermentation.

Heating - the standard makes a basic statement that honey shall not be heated or processed to such an extent that its essential composition is changed and/or its quality is impaired. Levels of substances used to determine over-heating (such as HMF and diastase) are recorded later in the standard (see below).

Filtering - This is allowed under the standard, provided that sufficient pollen grains are retained which can be used to characterise the honey.

Moisture content - Under the standard, honey cannot have more than 21% moisture, except for heather (Calluna), which can have up to 23%. Interestingly, this makes it very hard for many honeys produced in tropical countries with high humidity to meet the international standard, and may reflect a certain bias on the part of large honey buyers and packers (who are predominantly from temperate-climate countries).

Hygiene - The standard "recommends" that the honey is prepared and handled in accordance with appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene, and is free of microorganisms, parasites or substances originating from either, which may represent a hazard to health. Luckily, honey as a rule does not contain such things anyway.

Origin - Under the standard honey may be designated by the name of a geographical or topographical region if the honey was produced exclusively within the area referred to in the designation.

Floral source - "Honey may be designated according to floral or plant source if it comes wholly or mainly from that particular source and has the organoleptic, physicochemical and microscopic properties corresponding with that origin." I' ve quoted this passage directly from the standard, since it may have some importance in our current debate regarding standards for manuka honey. To be manuka under this standard, the honey would need to smell and taste like manuka honey (organoleptic property), be thixotropic (physicochemical property), and have a percentage of manuka pollen within a recognised and accepted range (microscopic property).

Methods of processing - such terms as extracted, pressed, comb and chunk honey are defined.

HMF content - HMF stands for hydroxymethylfurfural, and is a chemical which is produced in the breakdown of simple sugars, and especially in the case of honey, fructose. The amount of HMF in honey has been shown to directly correlate with the amount of heat applied, in combination with the amount of time the honey is subjected to the heat. Interestingly, however, there is no suggestion that HMF is a toxin in honey, especially in the low levels normally experienced in even over-heated honey (in comparison, a 12 ounce can of cola-type soft drink has 456mg/kg of HMF).

Nevertheless, HMF is a standard means of determining how much honey has been heated, and in the past whether the honey was adulterated with sucrose. The Codex standard sets the maximum limit for HMF at 80mg/kg, or twice the current

EC maximum level. Some observers believe the EC level was set at the lower level because it was based on research on European honeys. Some tropical honeys are said to have naturally occurring levels of HMF above the 40mg/kg level.

Diastase content - Diastase is an enzyme which is used by honey bees to change the sucrose in nectar into the fructose and glucose found in honey. It is weakened or destroyed by heat, and so is another means of determining whether honey has been over-heated. Some people also argue that its presence in honey makes it more "natural" and "health-giving". The minimum diastase level in the standard is 8 (using a measure called the Schade unit), or 3 in those honeys with naturally low levels of diastase. Once again, it can be debated whether diastase levels are an appropriate means of determining honey quality, since diastase varies according to floral source and storage.

Those are the proposed international Codex standards for honey. The question then needs to be asked, how do New Zealand's legally determined honey standards compare? Legal requirements specifically relating to honey appear in two pieces of New Zealand legalisation: the Food Regulations (1984), and the Honey Export Certification Regulations (1980).

Section 146 of the Food Regulations defines honey in quite similar language to the proposed Codex standard. It does not, however, contain any statement about the other substances besides sugar that it contains, apart from minimum levels for apparent reducing sugars, ash and apparent sucrose (which again are similar to the Codex standard).

In fact, section 148 of the Food Regulations forbids the use of any wording on a honey label stating or implying that the food value of honey is superior to that of sugar (which is defined in the same regulations as sucrose). So our standards do not allow honey as a food to be differentiated from sucrose.

The regulations also set a maximum for moisture content of 21%, the same as Codex. However, our regulations do not allow the heather we produce in this country to have 23% moisture, like the Codex standard. Our regulations also have another provision, for "industrial honey", which can have a maximum moisture content of 25%.

The Honey Export Certification Regulations pertain solely to honey exported from New Zealand. They have no jurisdiction over honey sold on the domestic market. Section 5 of the regulations deals with honey standards, and forbids the presence of organic or inorganic substances foreign to the composition of honey, the presence of foreign tastes or orders, fermentation, or the heating or storage of the honey to such an extent that the honey's enzymes are destroyed or made inactive. This is similar to some statements regarding heating in the Codex standard, and while neither of our regulations set any levels for HMF, the Export Regulations at least make mention of honey enzymes.

The Export Regulations also set limits for moisture content in export honey -- in this case 19%, except for ling heather (which can have 20%). It should be noted that both of these figures are less than the maximum allowed in the Food Regulations for domestic honey, and also less than the Codex revised standard.

There is no mention in either piece of New Zealand legislation of labelling of honey by geographic origin or floral source. Terms like extracted honey, comb honey and chunk honey are defined in the Honey Export Regulation (and so relate to exports), but not in the Food Regulations. Food hygiene regulations relating to honey are contained in the Food Hygiene Regulations 1974, and are a requirement, rather than the "recommendation" contained in the proposed Codex

revised standard.

WORLD HONEY PRODUCTION RANKED

Rank	Country	Annual Production 1992-95 average (tonnes)	Exports as % of Production (1992-94 average)
1	China	179,310	53.2
2	USA	101,060	4.2
3	Argentina	63,450	94.0
4	Ukraine	61,293	1.2
5	Turkey	56,910	5.2
6	India	51,100	1.7
7	Mexico	59,934	51.0
8	Belarus	52,075	1.8
9	Russia	46,900	1.6
10	Canada	31,609	29.7
11	Kazakhstan	28,850	?
12	Germany	27,037	56.8
13	Spain	27,012	29.7
14	Ethiopia	23,900	0.4
15	Kenya	23,500	0.1
16	Australia	22,601	48.0
17	Tanzania	21,875	0.4
18	Angola	20,900	?
19	Brazil	18,852	2.3
20	France	17,574	20.5
28	NZ	8,943	22.3

An interesting article on world honey production recently appeared in the March 1997 issue of Bee Culture. In it, John Parker, a retired US government statistician, presented four-year production totals for 40 nations, based on FAO data. Unfortunately, New Zealand wasn't included in that report; but I've added the New Zealand figures from last month's BeeFax to this table showing the top 20 players, so that readers can make some useful comparisons:

Two things struck me when I first looked at this table. First, it is sobering to note what a small player New Zealand really is in the international market. But even more astounding are the high levels of production in some countries we don't normally associate with beekeeping. For instance, who would have guessed that Turkey, India and Belarus each have more than double the production of Australia, or that the Aussies would also be beaten by Ethiopia and Kenya. New Zealand comes in just ahead of Iran and Austria, but is out-produced by Korea, Italy and Poland.

Perhaps luckily for New Zealand, relatively few of the "unknown giants" of beekeeping are involved in exporting. We do have to wonder how long this will continue, however. We are constantly being told about the "global economy", and as trade barriers come down, it isn't hard to imagine more honey from the old Soviet Union moving into Western Europe, or the cash-starved African nations organising some sort of export drive.

The point of this article isn't to try and scare anyone here in New Zealand. I believe it is important, however, for both honey producers and exporters to be aware of just where we stand in the world production stakes. On the positive

side, increases in New Zealand production and exports are unlikely to make the slightest difference to international prices. And of course knowing the amount of honey which may be entering the world market in the future reinforces just how important it will be for New Zealand to niche market its honey on a value-added, packed line basis if it wishes to continue to have high export returns.

The other thought that struck me is how little we know about production systems and management in most of the countries on this table. Our industry is based almost exclusively on ideas imported from the UK and North America. It is easy to dismiss beekeepers in most of these other countries as "unsophisticated peasants". However, this isn't necessarily true for the Eastern European countries. Or, for that matter, in Argentina and Brazil. The language barrier makes it hard to find information from many of these countries, but it does make me wonder just how many good ideas we may be missing out on.

- Paul Bolger, AAO, PUKEKOHE

DEHUMIDIFIERS IN THE HOT ROOM

Over the past 3-4 years, dehumidifiers have become readily available in New Zealand. And because they are now relatively inexpensive, many beekeepers have considered using these "household" sized units in their operations for drying both honey and pollen. Some beekeepers have had great success with the devices, while others have reported less impressive results.

Obviously there are potential advantages in having a drying option in your hot room. You might be able to harvest your honey earlier than would normally be the case, without worrying about possible fermentation. And you could also store your honey-filled boxes longer before extraction without the honey absorbing more moisture.

However, we should not expect miraculous results from a house-sized dehumidifier. Air movement at the right temperature and relative humidity (RH), and the exposure of the surface area or comb faces to this air movement, is paramount for good dehumidification. Regardless of what method is used, honey will not dry evenly unless the fresh (dehumidified) air is mixed and flows evenly through the hot room, through the super stacks and across the comb faces. For efficient drying, the "incoming" air should be at 27oC or warmer and an RH of 58% or less.

And there is a real need to do some homework on dehumidifiers before racing out and spending up to $1000 on one unit, let alone two or three!

In general, dehumidifier specifications are established at a standard temperature of 30oC and a relative humidity of 100%. Therefore, if the statement is made that the unit will extract 6 litres of water in a day, it is at 30oC and 100% RH, not necessarily the temperature and humidity in your hot room.

It should also be obvious that it is unlikely that the stated optimum performance of many units will ever be reached in most homes in New Zealand. However, you as a beekeeper have the advantage of being able to control at least air movement and temperature in your hot room, and this is a big advantage. Be aware, though, that along with the heater you already have in the room, as the dehumidifier takes moisture out of the air, it will give off heat as well. So the temperature in the room will rise substantially, and it's important that you control at least the heater with a good thermostat so that you don't have a comb melt down!

As an example of specifications, let's take a look at a readily available model on the New Zealand market, the Delonghi DH25:

Watts -- 390

Average running costs per hr (on max) -- 4.3 cents

Tank capacity -- 6 litres (but has continuous drain)

Working range temperature as stated -- 0oC to 32oC

Optimum air temperature -- 30oC

Airflow through unit -- 260m3 per hr

The stated performance factors at which this unit is capable of extracting the maximum amount of water from the air is 30oC (and 100%RH). Given this prerequisite, and allowing for at least 5 air changes per hour (they don't tell you this, but it gives you an idea about room size and ventilation), you can expect up to 20 litres of water condensed from the room every 24 hours.

What all this amounts to is that a domestic dehumidifier will work superbly for pollen drying, and very well for honey drying in some cases, providing that all factors limiting performance are minimised by the beekeeper.

Before rushing out to your favourite retailer, get a copy of the June 1997 issue of Consumer Magazine, and check out "Test Dehumidifiers - The Dry Air Machine" (pages 22-24). Amazingly, the cheapest, noisiest model is the second best performer. Maybe it's not worth having in the comfort of your own home, but in the hot room where noise isn't a big deal, who cares!

- Dave Grueber, AO, BLENHEIM

COST OF HIVES AND INCOME TAX

Now that we're in the middle of winter, beekeepers throughout the country are reluctantly delving into their books, sorting out budgets and cash flows, and finalising their accounts. If you're wondering how to treat new and existing hives for tax purposes, what follows is the Inland Revenue position.

Hives belonging to ordinary commercial beekeepers are not trading stock. The only exception is for those beekeepers (such as queen producers) who produce and sell hives as part of their normal business.

The cost of hives purchased by a taxpayer commencing beekeeping, and the cost of additional hives purchased by an established beekeeper, are capitalised. However, there is no deduction allowed for depreciation. (Note: new or additional hives first used before 31 March 1988 qualified for the first year depreciation allowance, subject to any recovery of that allowance when sold. This allowance was repealed with effect from the 1993-94 income tax year.)

The cost of hives or boxes to replace existing hives or parts of hives, less any amounts received on disposal of the hives or parts replaced, is allowed as a straight deduction against income. However, to ensure that the costs of additional hives purchased are not charged against income, beekeepers are required to furnish each year to IRD a memorandum account for hives or parts of hives.

- James Driscoll, AAO, PALMERSTON NORTH

SHARE-CROPPING AND HIVE LEASING

Recently I've received calls from several people who want to lease out their hives. They've asked me my opinion of the practice, and I had to tell them that in my experience most share-cropping and hive leasing arrangements don't work out.

These types of beekeeping arrangements usually fail for one of several reasons, including:

the agreements between the parties haven't been put in writing, or the agreement wasn't detailed enough,

the parties have expectations that just can't be met when the honey crop fluctuates,

the person who leases the hives tend to have short term goals (hive increase, more apiary sites, etc), while the owner has more long-term goals (like repairs and maintenance, and good AFB control).

Still, lease arrangements can be successful, provided that both parties are willing to compromise and take the time to sort out most details in writing so that there is little or no misunderstanding about who is responsible for what. There is also more potential for meeting income expectations in outfits which have diversified into pollination and/or bulk bees in addition to honey production.

Several years ago, Murray Reid prepared a six page pamphlet on share-cropping and hive leasing which discusses the issues involved, and gives useful pointers about how to overcome most of the potential pitfalls. If you are interested in either leasing hives, or maybe thinking about share-cropping your outfit for a couple years, and you want to use this guide, contact your local AAO, who will be able to supply you with a copy free-of-charge.

BEEFAX

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AUSTRALIA REMOVES QUARANTINE

Carrying on from our report in the May edition of BeeFax where we suggested that Australia was about to make a change to its policy regarding imports of New Zealand bee products, Dr. Jim Edwards of the MAF Regulatory Authority has now advised MAF Quality Management that the requirement for bee product exports to Eastern States of Australia to be heat-treated and tested for chalkbrood was removed on July 4, 1997.

An import permit will still be required for the following apiary products: honeycomb (including honey containing honeycomb), pollen and beeswax. Used beekeeping equipment is still prohibited under the Australian Federal Government's Quarantine Act 1908.

What this announcement means for New Zealand exporters is that honey (and products containing more than 1% of honey) may be imported into Australia (except Western Australia) without an import permit and without heat treatment or testing for chalkbrood. Additionally, imported propolis and royal jelly will no longer need to be accompanied by a manufacturer's declarations stating that the product contains less than 1% honey or pollen (w/w).

Commercial importers wishing to distribute honey or apiary products into Western Australia will need to contact the Chief Veterinary Officer, Agriculture Western Australia, 3 Baron-Hay Court, South Perth, WA 6151, phone (08)9368-3342; fax (08)9367-6248.

Passengers arriving at ports in Australia will still be required to declare any honey or bee products that they have with them. Those arriving at ports outside of Western Australia will be advised of the restrictions regarding Western Australia.

Any honey or apiary products arriving at ports in Western Australia without the correct permits and certification will be placed under quarantine and either destroyed or subjected to appropriate laboratory examination at the importer's expense.

Dr. Edwards is continuing in his attempts to negotiate free access to Australia (Eastern States) for our comb honey.

- Ted Roberts, Manager, Apiculture Export Certification

NEW APIARY DATABASE

Over the last 9 months, MAF Quality Management has been installing a new Apiary Register database. The old system, which has served us well, was first developed about 15 years ago in a DOS (non-Widows) based program called Kman. The old Apiary Register was maintained in 7 separate databases throughout the

country, in each Apiary Registrar's office, and essentially ran on stand alone computers with single user access.

The new database uses a Windows environment (ie, it has buttons, and pull-down menus, and allows the use of a mouse). It also is stored at a central location, with access from all apiary registrars' offices. While Registrars in individual Apiary Districts are still the ones that input and update apiary information for that district, these same Registrars (and AAO's) can look at apiary information for any beekeeper, anywhere in the country.

The new database system is made up of three parts:-

The Database - this is were the information is stored. (For those of you how are into computers, the system uses a relation database, running on Microsoft SQL Server). The data for the whole country is stored on a file server in Wellington. This means we all have "read access" to the data for the entire country, allowing all AAO's to search for information and run reports for any Apiary District. However, as I mentioned above, apiary information can only be updated by the Registrar legally responsible under the Apiaries Act for maintaining the Apiary Register in the Apiary District where the apiary is located.

The Front End - In our individual district offices, AAO's and Registrars use a front end that provides us with our desk top environment to work in, and connects us to the database in Wellington. (Again, for those interested in the technical side, the front end is programmed in Power Builder, which runs in a Windows environment where all the data is entered and a couple of reports are " hard-coded" in).

Reports - When we produce inspection lists, or AFB statistics, or beekeeper lists, we first need to generate a report. To generate a report, we begin by retrieving information from the central database. To do this, we use a third product call Impromptu. Impromptu is a "report writer" which allows us to retrieve the information from the database on an ad hoc basis.

The beauty of Impromptu is that we don't have to employ a programmer every time we want to produce a new type of report. We can relatively quickly and easily do our own programming that will give us the information we need. The report writer offers us a flexibility we never had in the old Kman system (where the reports had to be produced by a programmer, and were "hard-coded" in and couldn' t easily be changed).

Disease Recording

The new database allows us to store and manipulate disease information much more effectively than in the past. We can now store each incident of disease for an apiary, instead of just the total for that season. Among other things, this makes carrying out disease area freedom clearances for export certification much easier and more accurate.

We would therefore ask that in the future when you report a case of disease to us (particularly on a Statement of Inspection) that you make sure you actually record the date (as accurately as possible) when the disease was found.

Other Advantages

Among the many other advantages of the new system, the database will help us streamline our exotic disease outbreak procedures, and allow us to handle authentication and accreditation systems. The system has also been designed to

be easily modified, so as to accommodate future needs.

Statements of Inspection

When you receive your Statement of Inspection (S of I) this year, you will see some small changes that we hope will simplify things for you. If in the past you have received two or more S of I's (because you have apiaries in more than one Apiary District), you will now receive just one.

There is also a new field on the S of I called "Beekeeper No." This allows the beekeeper to use his/her own numbering system to dictate the order that the apiaries will appear on the S of I. You can thus list your apiaries in the same order as you work them. Another field has also been added, called "Site Name", This will allow you to include the name you normally use to identify that site (eg. "Willows" site, or "Old Bridge", etc...).

If you would like to see how the new Apiary Register database system works, feel free to drop in on your local AAO and he'll give you a demonstration.

- David McMillan, AAO, INVERMAY

[Editor's note: David is the person in our group who was most responsible for managing the move to this new system. There was a lot of work involved, and inevitably (because computers were involved!), more than a few headaches. Under the circumstances, however, David did a very good job! We'll no doubt have a few more hiccups along the way as we "shake down" the new system this coming beekeeping system, so please bear with us. I'm sure you'll find the new system much more user-friendly.]

MYSTERY BEE COMB FOUND

On 11 June, on the Napier wharf, a bee comb was found under a container that had been lifted up so that the container's bottom could be inspected. The comb was carefully removed and sent to MAF Quality Management's Lynfield Plant Protection Centre to be checked for mites. There were no bees on the comb when it was found.

Traceback on the container found it had come in empty, direct from Singapore. Before that it had travelled to Singapore from Kenya.

The entomologist who examined the comb reported that there was no sign of brood or any mites. However he did note that the comb contained some fermented honey.

Potentially this comb could have been produced by the African bee Apis mellifera scutella (ancestor of the American Africanised bee), or if it was made in Singapore, by the Asian honey bee Apis cerana, or the dwarf honey bee Apis florea. The Asian honey bee is the original host of the varroa mite.

Measurement of cell size would have told us what kind of bee made the comb, but unfortunately the comb was destroyed before this could be done.

Agriculture Quarantine is not funded by government to routinely examine the undersides of all containers that arrive in this country. The find was only made because the container was being checked for structural soundness, and was reported to MAF because the marine surveyor carrying out the work recognised the potential risk involved.

- Derek Bettesworth, AAO, WHANGAREI

WASP NEWS

We haven't had too bad a wasp problem for two seasons now, but that will change no doubt. In the meantime, the Landcare wasp team based at Lincoln and Nelson continues to work on ecological research, population modelling, biological control and development of poison baits.

The following notes are taken from the wasp research newsletter Wasp Times, No. 25, January 1997.

World Record - Wasps are probably more abundant in South Island beech forests that have honeydew than anywhere else in the world - up to 50 nests per hectare.

Queen Flight - Queen wasps can fly up to 70 kilometres to establish new colonies.

Effect on Ecology - Wasps are having a huge impact on the biology of beech forests - they eat many insects, spiders and caterpillars. They also affect the feeding behaviour of tuis and bellbirds.

Parasites - The European parasitoid Spechophaga vesparum vesparum was first released more than 9 years ago all over New Zealand and has established in at least two sites.

A new parasitoid, Spechophaga vesparum burra, from America, was released in September 1996 by Landcare and Donovan Scientific Insect Research. Three sites were chosen for the release: Marlborough Sounds, Arthurs Pass (North Canterbury) and the Waitakere Ranges in Auckland. This parasitoid has been reared in captivity at Lincoln since 1992 and tested to ensure it wouldn't attack honey bees, bumble bees or leafcutter bees.

Wasp Baits - the search continues for a selective bait, and especially sweet baits that would repel honey bees but not wasps. Researchers are looking at formulating a bait which honey bees cannot pick up with their mouth parts or will not choose to eat.

Finitron, a ready-to-use bait containing the insecticide sulfluramid in canned sardine cat food is the only protein bait currently available for wasp control. However, the bait is expensive, since it has to be kept frozen up until it is used. Trials were undertaken in 1995 using a 20% concentrate of sulfluramid mixed into canned sardine cat food to give a final concentration of 0.5% sulfluramid. This non-frozen formulation was as effective at reducing wasp numbers as the more expensive frozen Finitron. No decision has been made yet about the commercial availability of the new sulfluramid concentrate, but formulation trials are underway.

Wasp Brood Diseases - the Landcare team are busy studying brood diseases of wasps to see if something can be found that will help knock them out. Some brood diseases recorded include species of the fungi Beauveria and Aspergillus, as well as cricket paralysis virus, Kashmir bee virus and the bacterium Serratia marcescens.

Australia - Australia now has the common wasp, as well as the European wasp. But unlike New Zealand, the common wasp has up to this point not spread very far. It seems to be confined to the eastern suburbs of Melbourne and a few other high rainfall areas of Victoria. European wasps are found through much

of SE Australia and modelling predicts they will spread across Southern Australia and up the east coast to Central Queensland. There are many local reports of wasps being a real nuisance around homes, schools and picnic and camping areas, just like in New Zealand. The Australians have imported a bunch of the parasitoid Sphecophaga v. vesparum and released them, mainly in suburban areas. So far no parasitoids have been recovered from wasp nests, but it is early days yet.

Argentina - The European wasp has also established in Patagonia (South West Argentina) and is spreading. They are also making a nuisance of themselves and plaguing tourists and local beekeepers. Beekeepers are helping to fund research work on the wasps.

Wasp Biology - The Landcare team have undertaken a lot of work on basic wasp biology, like how many eggs does a queen lay per day, how long does a larva/ pupa take to develop, and how many cells does a worker build each day ,etc. To answer these, and other questions, the team established wasp nests in boxes where they could see what was going on (a wasp observation hive in fact) and also dissected over 100 nests. The team found:

Once nests get beyond a certain size the queen will lay around 200 eggs per day

Wasp colonies in and around Palmerston North are bigger than colonies from Nelson beech forests.

The average end-of-season colony from Palmerston North contains 7,500 worker cells and 1,250 queen cells compared to 4,900 worker and 800 queen cells from Nelson beech forest nests.

Larger colonies appear to build more queen cells than smaller colonies.

The team will use the wasp model information they now have to gauge the effects of the parasitoids as well as poison baits .

- Murray Reid, AAO, HAMILTON

ILLEGAL QUEEN IMPORTS

First fireblight, now queens! According to the May 1997 edition of The Australasian Beekeeper, illegally imported queens were smuggled through Sidney airport late last year. The Federal Council of Australian Apiarists Associations reported that six queens and escorts from Canada were hidden in a suitcase, and brought in by a courier acting for a beekeeper.

Few other details are given. According to the editor of the magazine, It is unclear why there has been no official report from the Australian Quarantine Investigation Service (AQIS), or why no charges have been laid.

Given that both tracheal mites and varroa are present in Canada, this illegal and uncontrolled introduction is shortsighted and reckless in the extreme. However desirable an exotic strain of bees might appear, it would never make up for the devastation which could be caused by either one of these parasites.

The case is doubly puzzling because it is possible to legally import queens into Australia under controlled conditions. Normally, the parent stock are imported, induced to lay in a hive in an indoor flight facility, and then destroyed. Breeder queens are then reared from the young larvae. The facility, which was purpose-built for the job of queen quarantine, is located at the

Eastern Creek Quarantine Station in New South Wales.

The smuggling case in Australia should serve as a particular warning to New Zealand beekeepers. There are always a few people out there foolish enough to endanger the livelihoods of the rest of us, and it is up to responsible beekeepers to help protect our industry. Any information on illegal imports should be reported to MAF immediately (FREE PHONE 0800 809 966). Rest assured that your report will be investigated thoroughly, and that your confidentiality will be maintained.

- Paul Bolger, AAO, PUKEKOHE

GADGETS AND GISMOS

Heat Exchangers -The 'quiet' months of winter are the time to think (or maybe just dream) about honey house design and processing equipment. Anyway, if you are thinking about honey heaters or heat exchangers, then the line of Teralba Dimpleflo equipment may be for you. Dimpleflo heat exchangers come in plate and tube form, but the tubular models will be the best for honey.

There are several models to chose from within the range of tube heaters, too. The Mono-Tube is a single tube heat exchanger, of whatever diameter you want, surrounded by a hot water jacket, and it can be custom insulated if you wish. The tube can be any length or a series of tubes can be stacked one above the other and joined at each end by a U-bend to give a continuous length (Multi-Tube Heat Exchanger). All the U-bends are removable for easy cleaning.

Teralba also make a Multi-Tube heat exchanger which is a series of smaller pipes encased within a hot water jacket. The Rolls Royce model is their Multi-Annular, which consists of a series of concentric tubes. The primary fluid, or honey in our case, flows one way, while heating or cooling fluid flows in a surrounding tube in the opposite direction as a counter current. The closing plates at each end of the concentric tubes accept the honey and hot water for collection and distribution.

What I like about these heaters is that you can monitor each o-ring seal and see which one may be leaking. It is possible to remove just the one tube for repair without affecting all the other ones. The tubes come in lengths from one to six metres.

All the heat exchangers can also be used for cooling as well as heating, and some applications, especially in the wine industry, use the same unit for heating then for cooling. However, you will need more capacity for cooling than heating, so the initial design specification is important. The NZ agent will assist with all that.

All the Dimpleflo units are made of stainless steel. They are self-draining, and temperature probes and gauges can be incorporated. The units can be insulated and they can be mounted on mobile platforms or supplied as fixed units.

All the units have many large dimples in the heating surfaces, hence the name Dimpleflo. The dimples are designed to increase the flow of honey and increase heat transfer. Teralba also make side-entry or rim-clamped stirrers ranging from 0.3 kW - 25 kW. Propellers, shaft length and configurations are tailor-made for your product, as is the direction of flow (ie do you want the honey to rise up the shaft and down the walls or vice versa?). Teralba also make units for mixing product in closed or open mouthed drums, as well as

rotary cleaning heads units to wash drums.

Teralba Dimpleflo units are made in Australia. but the New Zealand stockist is Dave Goddin, Aurora Agencies, 28 Strowan Ave., Hamilton, ph (07) 855-4733.

Tamper-Evident Pails - In recent issues of BeeFax we have mentioned tamper evident lids for liquid packs and jars. Now there is an equivalent for pails. Reese Viscount have a range of products that may interest beekeepers apart form their tamper evident Top Pail. These include their freight efficient Space Savers, straight sided Top Cans, and the super tough Pry Off. Reese Viscount is in Auckland (09) 276-8679, Wellington (04) 387-3129 and Christchurch (03) 365-4382.

Sanitary Phytosanitary (SPS) Agreement - There have been a number of articles and talks to beekeeping conferences on the topic of international trade and the importance of the 'new' rules under the World Trade Organisation (WTO) and the General Agreement on Tariffs and Trade (GATT). The SPS is part of that process. Under the SPS, imports cannot be prohibited unless there are justifiable scientific reasons to do so.

The Regulatory Authority of MAF and the Ministry of Foreign Affairs and Trade have joined forces to produce a very attractive and informative glossy brochure called 'Trade Opportunities - how the World Trade Organisation's Sanitary and Phytosanitary Agreement will benefit New Zealand Primary Producers'.

The 14 page booklet, which has a foreword from the Minister of Agriculture and International Trade, gives a brief historical background to the development of the GATT and WTO agreements. The main part of the booklet , however, concentrates on the principles of the SPS agreement and looks at the conditions that must be met by the 130 countries who are signatories to the WTO. It talks about necessity, consistency, harmonisation, equivalence, assessment of risk, determining the appropriate level of protection, regional conditions and transparency. The booklet also addresses how the SPS will affect imports into New Zealand and how it will benefit exporters.

For more information, or to request a booklet, write to the MAF Regulatory Authority, PO Box 2526, Wellington, ph 04 474-4100 fax 04 474-4133 or E-mail sps@ra.maf.govt.nz

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BEEFAX

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"OR" EXERCISE A BIG SUCCESS

During the last week of August, NBA members and MAF Quality Management (MQM) staff took part in an Outbreak Response (OR) exercise in Hamilton. OR is the new term now being used by MAF for Exotic Disease and Pest Response (EDPR), and this OR exercise continues on with the exotic bee disease outbreak response training which has been a feature of MQM's involvement with the New Zealand beekeeping industry in recent years.

Beekeeper participation in the Hamilton OR exercise was tremendous, and exceeded MQM's expectations to the point that it was almost an embarrassment. MQM's management abilities and transport arrangements were put under some pressure by the number of beekeepers who wanted to take part, but this just added value to the event as a training exercise, since surely all of us would be under pressure in a real response.

A total of 2525 hives in 261 apiaries were inspected by 34 teams over two days. Each team consisted of a MQM Field Team Leader and several NBA members. American foulbrood was used as the disease subject, so the exercise also filled the role of a diseaseathon under the terms of the NBA's American Foulbrood Disease Control Programme contract.

During the exercise, 49 AFB hives were found in 31 apiaries, or 1.9% of the hives in 11.9% of the apiaries inspected. While these figures are considerably higher than the 1996-97 New Zealand incidence figures of 0.46% of hives and 2.9% of apiaries, it should be realised that the total incidence figures represent all reports of AFB from all beekeepers throughout the country (including those beekeeping outfits and areas where AFB is almost non-existent).

A better comparison can probably be made with the NBA volunteer (diseaseathon) inspections which were carried out in 1996-67. In those inspections (which, like this OR exercise, were partially targeted to areas or beekeepers with known AFB problems), the infection rate was 1.5% of hives inspected, and 5.5% of apiaries.

The large number of inspections was made possible by the efforts of 45 beekeepers from the Waikato NBA branch, and 11 from the Auckland branch. Beekeepers contributed 640 hours and travelled 5500km to do these inspections. As well, many participants travelled a long distance to get to the exercise. A total of 35 MQM staff were involved in Emergency Headquarters roles and as Field Team Leaders

The event, which was run from the Hillcrest Motor Lodge in Hamilton, was designed to test MQM's procedures for responding to an exotic bee disease and to train MQM staff and beekeepers in a realistic simulation situation. In a real response to European foulbrood (EFB), for example, if the Chief Veterinary Officer decided to proceed with a response, it would be run in almost the same way, except that field teams would be looking for EFB, rather than AFB.

Russell Berry, your NBA President, and Tony Lorimer, the Waikato NBA branch Secretary, were in the Emergency Headquarters as observers. They contributed several suggestions as to how beekeepers could help in the headquarters side of the operation. Tony and Jane Lorimer also attended the final debriefing and again were able to make a valuable contribution.

Recently, there has been a change in government policy regarding OR, with policy makers saying that affected agricultural industries will be expected to contribute more to exotic disease and pest outbreak responses. With the Hamilton OR exercise, the beekeeping industry has once again demonstrated that they are already well down that track.

Derek Bettesworth, Bees OR Process Manager, WHANGAREI; Cliff Van Eaton, NBA AFB Control Programme Contract Manager, TAURANGA

KOREAN IMPORTS...GOOD NEWS, BAD NEWS

In the July issue of the Korean Monthly Report, published by the New Zealand Embassy, Seoul, comes a report that Korea is finally opening up its market to foreign honey. Korea has for years had a closed market for honey and other agricultural products, although it is now taking steps to liberalise its trade in preparation for entry into the World Trade Organisation.

Under the country's Minimum Market Access quota system, 287 tonnes of honey will be able to be imported by the National Livestock Cooperatives Federation and the Korea Tourist Supply Centre, although a 20% duty will be applied.

That's the good news. The bad news is that honey imported outside the Minimum Market Access will be charged a duty rate of 261.9%! The report goes on to say, however, that the low tariff rate quota amounts will be increased every year through to 2004, after which time only tariffs will apply.

We understand that no export certificate will be required for imports of this honey, provided the consignment meets the honey standards set by the Korean Food Code. Beekeepers should be aware that the maximum HMF level for honey sold in Korea is 40mg/kg, which is half the maximum level allowed in the Codex Alimentarius world honey standard (for an article on HMF and honey quality, see page 4 of this edition of BeeFax).

SNATCHING DEFEAT ...

At this year's NBA Conference, Ian Berry of Arataki Honey, Havelock North, read out a quote during debate on remits concerning the funding and reviews of the Honey Marketing Committee.

The quote was from Gil Simpson, the chief executive officer of the Christchurch-based Aoraki Corporation, and one of the country's leading computer company operators (he founded Cardinal Network, developed the LINC system used by many overseas companies, and recently established JADE, which specialises in the use of customer-friendly information kiosks).

The quote appeared in an article about Mr. Simpson in the July-August 1997 issue of Aotearoa, the Air New Zealand Link in-flight magazine. The quote is as follows:

"When I began in business one of the things I consciously prepared myself for

was managing success. Managing failure is so easy -- it means not investing money, cutting back, closing down.

"I want to tell you something I heard the other day -- 'snatching defeat from the jaws of victory.' That is classic New Zealand.

"New Zealand society is very good at doing that to itself. It stops just as the trumpets are about to sound and liberty is at hand. We get a good idea, go for it, and then pull out at the last minute. We need to have the courage to finish things."

BREEDING FOR HYGIENIC BEHAVIOUR

Most New Zealand beekeepers are probably aware that selecting for hygienic behaviour is the most cost effective means of reducing bee brood diseases such as chalkbrood, sacbrood and American foulbrood. It is also a defence again pests like the varroa mite, and possibly other pathogens like nosema and viruses. Hygienic bees detect and remove diseased brood before the pathogen becomes infectious, and remove mite-infested pupae, interrupting the reproductive cycle of the mite.

Selecting for hygienic behaviour can be as simple as choosing breeder queens whose colonies consistently show very low or zero levels of infection (especially sacbrood, chalkbrood and paralysis virus). If you want to be more scientific then you need to challenge select colonies with 50 x 50 mm squares of sealed pupae that have been freeze-killed.

The square of dead brood must go in the centre of a brood comb...and, yes, you do make a mess of a bunch of frames. But the benefits of finding good hygienic breeder queens are well worth a few frames. Hygienic queens are those whose bees remove all the freeze-killed brood within 48 hours over 2 trials.

Ben Oldroyd, at the University of Sydney, attempted to find out how widespread hygienic behaviour was in Australian bee stocks. He purchased 10 sister queens from each of 10 queen bee producers from NSW, South Australia, Victoria and Tasmania. The 10 lines included Italian, Caucasian and Carniolan strains, with the sister queens within each line open-mated.

Ben found that 80% of the colonies did not show hygienic behaviour when tested with freeze-killed brood on 3 separate occasions. Two of the 10 lines showed good hygienic behaviour and 2 colonies were very hygienic.

Oldroyd goes on to say, "As hygienic behaviour is recessive, it should be possible for breeders to produce hygienic queens for sale by selecting hygienic breeder queens and using them to produce both queens and drones and carrying out matings in an isolated area."

"Colonies comprised of 50% hygienic bees are disease resistant. Therefore, provided that at least 50% of the drones available for mating in queen production areas are hygienic, it should be possible for queen producers to provide commercial queens whose daughter workers will also be disease resistant. "

This is in a controlled mating environment, but most beekeepers use queen cells in their apiaries, so even if the queens were from selected hygienic stock they probably would mate with unselected males produced from non-hygienic queens. In this situation, the question becomes, "Would we still get hygienic worker bees?"

In a word, yes. American researchers have found that hygienic queens raised from inseminated stock did in fact retain the hygienic trait when outcrossed with unselected males, and that this hygienic behaviour translated into increased production and less disease.

Spivak and Reuter (1997) carried out some field trials in Texas and Wisconsin during March 1996, where they set up 49 hives with selected hygienic queens that were open-mated and compared these to 46 colonies headed by unselected commercial queens. Both lots of queens were open-mated in the same location.

The scientists found that the hygienic colonies had significantly lower levels of chalkbrood, and produced significantly more honey (41 kg/hive vs 30.4 kg/hive). The hygienic colonies also had significantly lower levels of varroa mites in 3 out of the 4 test apiaries. Frames of brood and bees, and temperament, were the same for both lines of queens.

What this means in practical terms is that all beekeepers should be using hygienic queens for queen cell production. The freeze-killed brood test is a bit time consuming, but it is currently the best test of hygienic behaviour we have.

However, a PhD student at the University of Sydney is currently attempting to genetically map the genes which control hygenic behaviour. If successful, scientists will be able to supply beekeepers with a biochemical test for hygienic behaviour. The tests are similar to those used in humans for diseases like cystic fibrosis or breast cancer.

Hopefully the tests will be cheap enough to screen a lot of potential breeder queens, as Oldroyd suggests only about 20% of the bee population would show some hygienic behaviour, and of this 20%, only a few colonies would show superior hygienic behaviour on all occasions.

References:

Oldroyd. B., 1997. Evaluation of Australian commercial honey bees for hygienic behaviour, a critical character for tolerance to chalkbrood. Australasian Beekeeper 98 (a):370, 372-374.

Spivak, M. and Reuter, G., 1997. Performance of hygienic colonies in a commercial apiary. American Bee Journal 137 (3):228.

- Murray Reid, AAO, HAMILTON

HEARD AT CONFERENCE

Over the years, we've enjoyed bringing readers "quotable quotes" from the NBA Conference. There's always a lot of wit, and often more than a little wisdom, in the speechs and debate. What follows are the quotes we collected at this year's conference in Nelson:

"As King Henry VIII said to his wives, I won't keep you long." -- Deputy Mayor, Tasman District Council, at the beginning of his speech opening conference

"While some may see the bee industry as small, your industry's contribution, both directly and indirectly to the economy, is very large." -- John Luxton, Associate Minister of Agriculture

"Bigger government doesn't bring a bigger economy, normally the opposite. Or perhaps put another way, we are better to have you building new beehives and putting bees in them than government building another beehive in Wellington and putting more politicians in it." -- John Luxton, Associate Minister of Agriculture

"I would prefer that the questions directed to the Minister end with a question mark, rather than an exclamation point." -- Nick Wallingford, NBA President

"I don't want to take money out of my pocket to fund clover weevil research. But I also don't want to end up, as a result of this pest, having no money in my pocket at all." -- Peter Berry, Hawkes Bay

The NBA President, in recognising Peter Bray, who wished to speak to a remit: " Mr. Berry...I mean Mr. Bray." Peter Bray, in reply: "Mr. Freud...I mean Mr. Floyd, might have something to say about that!"

"Does anyone know how to turn this mike on? (pause) I mean the microphone, not Michael Wraight!" -- Bill Floyd

"Someone has accused me of talking up the price of honey and giving beekeepers false expectations. That publicity resulted in $4 million more for the beekeeping industry. So I guess I'd better apologise for that." -- Bill Floyd

"The most frustrating part of my research on honey is getting beekeepers to send me samples for free testing." -- Dr. Peter Molan, as told by Bill Floyd

Heard amongst the thank you's to the Nelson branch for hosting the conference... "Thanks for the break!" -- Mike Stuckey, who ruptured his Achilles tendon doing a square dance at the conference dance

"When I was President, and you were on Executive, you used to annoy the hell out of me sometimes. But you were usually right -- and that used to annoy the hell out of me even more!" -- former NBA President Allen McCaw, in a speech of appreciation to out-going NBA President Nick Wallingford

ROYAL JELLY DEVICES AND HUNGRY FORAGERS

I'm not one to gossip, but... you can be forgiven for wondering what's going on in the world of royal jelly production. If you read overseas beekeeping magazines, recently you will have seen full page ads, many in colour, for a revolutionary new system for producing royal jelly and/or queens. These units are being marketed by Apian Technology Ltd of Whenuapai. Meanwhile, a similar unit (EZI Queen and Royal Jelly Systems) is being marketed by Royal Jelly NZ Ltd and Ceracell Beekeeping Supplies and advertised in local magazines.

As it turns out, the units are the same and the two promotion names come about as a result of a split in the partnership that developed the product. Marketing politics aside, beekeepers have been asking -- do the units work? I haven't personally tested them, but some Waikato and Auckland beekeepers have been using them for over 2 seasons to produce queens and commercial quantities of royal jelly. The units are extremely well made by a Hamilton plastics engineer, and I see no reason why they won't work a treat.

Still on the subject of royal jelly, the distribution of royal jelly within a bee colony was discussed in the February 1993 issue of Bee Culture. I always thought that royal jelly was fed to queen larvae, to worker and drone larvae in a modified form, and to adult queen bees. However, it seems that about half of

the royal jelly produced by nurse worker bees is consumed by adult bees, including foragers.

Researchers injected nurse bees with a radioactive material that became incorporated in their brood food glands and the royal jelly that these glands produced. They then measured how this labelled royal jelly flowed around the colony. The results were surprising -- younger workers received larger amounts of jelly than older ones, but considerable amounts were also given to foragers. So, it looks like the workers maintain the protein balance in a colony by producing, distributing and eating royal jelly, as well as collecting and feeding on pollen.

- Murray Reid, AAO, HAMILTON

START UP/SHUT DOWN LIST

In February, I paid a visit to Peter and Ross Ward's honey house in Hawea Flat, in Central Otago, and among all the extraction and processing equipment I saw an idea so simple you'd wonder why every New Zealand honey house doesn't have one.

It's just a step-by-step list on how to start up the honey house in the morning, and shut it down at night. The list is encased in a laminated plastic sleeve and hung in a prominent location so that it is easy to access and read.

According to Peter, they decided to use the list because they employ a range of staff in the honey house, many of whom are at least initially unfamiliar with how all the machinery works together. Peter admits, though, that even after having worked in the plant for years, it still pays to check the list every now and then, just to make sure that all the jobs are being carried out correctly.

Starting up and shutting down machinery like heat exchangers, boilers and spin-float wax separators is a complex business, and Peter believes that giving staff written directions to follow (as opposed to easily forgotten verbal instructions) has paid dividends in less machinery breakdowns/repairs and a cleaner, tidier shed.

HONEY QUALITY AND HMF

Hydroxymethylfurfural (HMF), along with the enzymes amylase and invertase, naturally occur in honey. The levels of HMF and these enzymes are variable between honey floral types and are affected by environmental factors such as temperature. The levels of HMF and these enzymes in honey can be used as indicators of excessive heating of honey during processing--the presence of HMF increases, while the levels of amylase and invertase decrease.

Internationally, the HMF content of honey is used as the standard measure for the exposure of honey to heat during processing. Currently, the international standard (Codex Alimentarius) for the maximum content of HMF in honey is 80mg/kg.

From the beekeepers' perspective, how quickly does HMF accumulate in honey? This is dependant on several factors: the floral type, acidity of honey, heat of exposure, and duration of exposure to heat.

White et. al. (1964) subjected three honey samples to storage temperatures ranging from -20oC to 60oC, and then analysed them for HMF. To accumulate 40mg\

kg of HMF at 20oC (ie., normal storage), it took approximately 800 days, whereas at normal hot room temperature of 48oC it took only 10 days. At 60oC it took only about 1 day. Interestingly, to accumulate 200mg/kg of HMF in the same samples it took 1100 days (at 20oC), 60 days (at 48oC), and 5 days (at 60oC).

Hadorn and Kovacs (1960) studied the increase of HMF in three 300kg drums of honey during normal liquefaction in at hot room at 48oC. The honey had reached 48oC after 24 hours, and after 120 hours the HMF levels in the three drums had increased from 12mg/kg to 22, 24, and 27mg/kg.

From these studies we can say that if honey is stored for a long period (years), or exposed to heat during processing, then consideration must be given to the likely increase in HMF from processing and/or storage.

HMF analysis can be carried out by several honey quality analysis labs in New Zealand, including MQM's Lynfield Food Services Centre (ph. 09-626-6026), and the Cawthron Institute (ph. 0800 809 898).

For further reading and the above references see White, J.W. (1978) Advances in Food Research. Vol. 24, Pages 285-375, Academic Press.

- Robert Rice, AAO, LINCOLN

POWERED BY HONEY

The Australian Honey Corporation is getting on the Sydney Olympics bandwagon in a print advertising campaign for its Capilano Honey brand. In the August 1997 Australian edition of Inside Sport magazine, they've got a full page ad, with the words "Powered by Honey", and a picture of Susie O'Neill, a gold medallist in swimming for Australia at the 1996 Atlanta Games. The ad quotes Susie as saying, "Being a success in swimming takes more than endless laps of the pool. My diet is important and I have to make sure I have the right fuel for my body. For instant energy you can't beat Capilano Honey. When I swim, I'm powered by honey, nature's perfect energy source." The Capilano ad also includes the logo of the Australian Institute of Sport.

BEEFAX

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EL NINO AND HONEY PRODUCTION

Recently we have been hearing a lot about the possible effects of El Nino on our weather pattern over the coming months. So, what is El Nino and what are its likely effects on the New Zealand beekeeping industry?

El Nino, sometimes called the Southern Oscillation, is a weather pattern which is associated with increased water temperature in the eastern Pacific Ocean and a negative pressure index between Tahiti and Darwin. The large scale result of this is that the monsoonal rains which usually fall in Northern Australia, Papua New Guinea, and Indonesia fall in the Pacific, while a greater number of severe storms than normal hit the western states of the USA.

In New Zealand, all we can say is that it is very likely that we will have a strong southwesterly influence throughout the summer. The last severe El Nino episode was in the summer of 1982-83. At that time, the pressure difference between Tahiti and Darwin was higher than it is currently (mid-September), but this could change by the time you read this article.

If that pattern repeats itself, then we are likely to experience a wet, cool and windy summer on the western side of both islands (possibly very wet in the south of the South Island), with dry conditions in the north and east of both islands.

What might this mean for beekeeping? The table below provides a comparison of crops for the two seasons before the El Nino, the El Nino production season (82-83), and then the two seasons after.

It's interesting that there wasn't a very good crop the year after the El Nino, either, although the good news is that the year after that (1984-85) was a record year, and the first time New Zealand ever topped 10,000 tonnes.

Murray Reid, in his report to the 1983 NBA Conference had this to say about the 1982-83 El Nino:

"The surplus honey crop...is the smallest crop since 1976 when 4915 tonnes was produced, and the smallest production per colony ever recorded in NZ. Production was down in both islands, but hardest hit was Southland where only 5kg per hive was produced. The eight year average there is 36kg per hive."

Cliff Van Eaton (then newly appointed as AAO, Gore) confirmed that half of the 28 commercial beekeepers surveyed in Southland had no crop, and 20% of the hives needed extensive autumn feeding.

What can be done to reduce the risks to your business this season?

* Consult your yard books and other records and study what happened in 1982-83:

* Can you shift part of your operation to safer sites?

* Did some sites produce well?

* Was the flow early or late?

* Be prepared to shift flood-prone sites.

* If you were not beekeeping in the area in 1983, then consult neighbours who were.

Budget conservatively:

* Do you really need that new truck this year?

* Talk to your accountant and plan for a poor crop.

Collect all the information that you can find about the developing weather pattern over the coming months and be prepared to adapt your plans quickly as the season unfolds.

Finally, while preparing for the worst, hope for the best, and always be ready for that bumper crop. Here's hoping the weather forecasters are wrong!

- Ted Roberts,AAO, PALMERSTON NORTH

HAMILTON "OR" FOLLOW-UP

A number of beekeepers who took part in the Hamilton Outbreak Response (OR) exercise asked us, "What happens now?", and "What are you going to do with all the field reports?"

Well, in a nutshell, this is what goes on back in an AAO's office once the exercise is over:

All beekeepers with AFB identified during field inspections, and beekeepers with hives where samples have been taken, are phoned and advised.

Lab submission forms are filled out for all of the samples, and the samples are then couriered to MAF Qual's Invermay Animal Health Laboratory.

Results of the microscope diagnosis of the samples come back from Invermay within a week.

All beekeepers with sampled hives that show positive lab diagnosis for Bacillus larvae, as well as the beekeepers with AFB cases found during inspection, are sent a formal notice under the Apiaries and Biosecurity Acts. The notice directs them to destroy the infected hives within 7 days of the date of the notice, and asks them to make a written acknowledgement of the destruction.

Beekeepers with sampled hives that return a positive lab diagnosis also get a copy of the lab report.

Plans are made for follow-up inspections under the NBA's AFB Control Programme contract with MAF Qual.

So how did we really do?

Beekeeper inspectors did an excellent job of diagnosing AFB in the field, and of the 43 suspect AFB samples sent to the lab, 37 (86%) were confirmed as positive for B. larvae. Six samples (14%) were negative, and for another 2 AFB hives, the team was so sure of their field diagnosis they didn't take a sample.

The lab screened all the suspect samples under the microscope and any that were negative or not-negative (meaning they were not sure) were cultured. Some of the suspects were from dead outs or moth-eaten hives where diagnosis is always difficult. So well-done to our beekeeper inspectors!

One sample was a suspect EFB, but fortunately this turned out to be negative. Several other specimens of adult pupae (bald brood) and hive detritus were not sent to the lab.

So the 49 AFB hives reported last month really should have read "49 samples taken". Of those hives sampled, 39 turned out to have AFB from 25 apiaries belonging to 20 beekeepers. All but 1 team found AFB, so that was good training for the MAF Field Team Leaders as well as the beekeepers.

And who had all the foulbrood? Nine hobbyist beekeepers had 12 hives infected, 2 semi-commercial beekeepers had 1 hive each and 9 commercial beekeepers had 25 AFB colonies. The worrying thing is that nearly all the hobbyist beekeepers had no previous history of AFB and it will take a lot of 'area inspections' to hopefully locate the source of the infection in their hives. Even more alarming was the large number of diseased hives in some of the commercial yards, many with rob-outs. We haven't seen the last of this, I am sure.

While we are on the subject of brick bats, we have been given a serve from a commercial beekeeper who says top boards with entrance holes were not put back the right way and many hives (which were on pallets) were robbed or got into fighting. I apologise for this, but teams were instructed to leave things as they were found and with the industry's help we made sure all teams had experienced beekeepers in them. So, to any other beekeeper who has found things not exactly as you would have liked after the inspections, we say sorry and promise to try to do better next time.

We also got a lot of comments from beekeepers who took part in the exercise. Here are a few choice ones:

"What a place to keep hives!"

"I learnt so much watching the commercial guy work the hives; he was so smooth" (I know who our hobbyist friend was referring to, but my lips are sealed...no sense swelling someone's head!)

"I can't believe how rough the hives were, and these guys are supposed to make a living from bees."

"Without map references or rural numbers I don't know how we would have found most of the apiaries."

"I enjoyed the lunches and the evening meal afterwards; it was good to socialise with fellow beekeepers."

"I had no idea so much organisation was needed for one of these things!"

"I prefer working with a MAF officer in the field rather than on our own like with the diseaseathons."

Comments like the last two give us warm fuzzies, but we in MAF Qual would also like to hand out some bouquets of our own. All participating beekeepers were sent a thank you note from MAF and the Waikato Branch of the NBA. I'd like to add my personal thanks to those who helped in the field and in the headquarters.

A special thanks also goes out to the Branch President, Lewis Olsen, and to Tony and Jane Lorimer, for organising the teams, liaising with us in MAF, and even spending half a day cutting up possum sacks for smoker fuel. Thanks Tony! Possum sacks for smoker fuel? Don't ask!

- Murray Reid, AAO, HAMILTON

WORLD MARKET DOWNTURN

The August issue of The Australasian Beekeeper contains some interesting information from the International Honey Exporters' Organisation (IHEO) on a downward movement in the world honey market.

All IHEO member countries except Canada, USA and Argentina report low buyer demand. World honey prices also continue to ease, and there is concern about when the downward trend will bottom out, although according to the article, some traders expect an up-turn in prices in September, in the lead up to winter in Europe. Stocks of Chinese honey are reported to be high in European warehouses.

The report also focuses on several problems in the last year relating to quality standards, and specifically mentions the fact that Mexican honey containing antibiotic residues has been rejected by German buyers.

According to The Australasian Beekeeper, "The last thing the market needed is another large exporting nation like Mexico to have difficulty in trading with the world's largest importer, because of the pressure the situation exerts on the seller and the domino effect another soft seller has on the rest of the market."

The report goes on to say that international quality standards for honey will be on the agenda at the IHEO meetings at the Apimondia World Beekeeping Congress in Belgium in September. The article says that major incidents during 1996-97 involving Chinese and Argentine honey on the world market, and pressure from Australia, has brought the matter to a point where all the major players in the world honey trade will be discussing the issue on a face-to-face basis. Unfortunately, however, no further details are given on what these "major incidents" where.

Prices (C&F) quoted in the article for honey imported into Europe range from a low of NZ$1875/t for Vietnamese honey, to a high of NZ$2300/t for some grades of Australian honey. Argentine white honey is selling for NZ$1985-2050/t, while Chinese honey is fetching NZ$1905/t. Elsewhere in the magazine, a report from Queensland says that world honey prices have eased from between NZ$2860-NZ$ 3015/t down to NZ$2030-2095/t in eight months.

OUR COUNTRY NEEDS YOUR HONEY...

...for scientific research!

According to Dr. Peter Molan, one of most frustrating parts of his research on

honey is getting beekeepers to send him samples. Well, here's your chance to make Peter's day!

If you get the opportunity to collect a honey sample, it would be of great help for a thesis project starting soon. Peter wants to investigate how reliable/ unreliable pollen analysis is for the identification of the floral source of honeys.

You can assist the continuing development and strengthening of New Zealand honey's image by:

Collecting a honey sample with a flower origin you are sure of.

One sample should be a piece of honey in he comb including at least one pollen cell (if possible). We recommend that you use an unbreakable 500g PET jar.

A second sample should be of extracted honey from the same extraction "batch" as the comb sample. Take a full 500g PET jar sample directly from the extractor spout as the frames from the apiary are extracted, but before the honey goes into the holding tank.

Label both jars with the flower origin and apiary location in such a way that Dr. Molan can tell that the samples belong together (eg, sample 1/A and 1/B). Post the samples together with your name and address to the address below.

It would also be helpful if you noted in a letter accompanying the samples the percentage of pollen cells you saw in the combs at extraction time.

The samples should be sent direct to:

The Honey Research Unit
Biological Sciences
Waikato University
Private Bag 3105
Hamilton

Attn: Dr. Peter Molan

The other option you have is to give any samples to your local MAF Qual Apicultural Advisory Officer. They will be happy to send them on to Dr. Molan.

So mark it in your diary, put this article on the fridge, do whatever it takes. Lets get out there and do it for our industry!

- James Driscoll, AAO, PALMERSTON NORTH

SMOKING BEES

No, this is not about a new tobacco substitute, or a new strain of nicotine-addicted bees. It's about what happens to bees when we blow smoke on them. People new to beekeeping often wonder how smoke works to calm a colony so that we can work without (hopefully) being stung. And, of course, there have always been several stock answers.

One is that smoke makes the insects "think" their tree or house is on fire, so the worker bees engorge themselves with honey in case they have to abandon the nest. A full stomach is supposed to make for "contentment", but in reality full workers probably just find it more difficult to bend their abdomens when

they try to sting.

There is also another answer that is less anthropomorphic. Worker honey bees produce "alarm pheromone" when they are disturbed. In contrast to other pheromones in the hive like the royal and brood pheromones, the reaction to alarm pheromone is very quick and direct.

Alarm pheromone is volatile and smells like bananas (isopentyl acetate) or blue cheese (2 heptanone). Smoke blown into a colony masks the odour of these alarm chemicals and the bees fail to communicate to each other that the hive is being threatened.

A research team headed by P. Visscher tested this hypothesis by using an electroantennograph, which translates chemical signals from a bee's antenna into electrical signals that are printed on paper. Smoke caused antennae to be 50 percent less sensitive to both of the chemicals in alarm pheromone. This effect was reversible, however, and antennal response returned to normal in 10 to 20 minutes. The investigators also tested floral odour and found the same responses, suggesting that smoke has a more generalized effect and is not specific for alarm pheromones.

While we are on the subject of smoke, tobacco smoke has recently been reported to reduce Varroa populations. Unfortunately, however, this natural material is difficult to control, and the exact dosage that kills mites, but doesn't harm bees, is unknown.

Dr. Frank Eischen, working at the Weslaco Bee Laboratory, has taken this idea to another level. So far he has treated bees with the smoke of over 40 plants. He takes cages with 300 to 400 mite infested bees, exposes them to smoke for 60 seconds while covered in plastic, and then counts the number of mites that fall off.

Most smokes don't kill the mites, it seems. They are simply knocked off the bees. If not caught by a sticky board trap, the mites, like the bees, "Pick themselves up, dust themselves off and do it all over again." It is not clear, Dr. Eischen says, whether the mites are confused or just irritated.

Two materials that show the most promise are the creosote bush and dried grapefruit leaves. Dr. Eischen emphasizes that this smoke treatment is only experimental at the present time; he does not yet recommend the process. There are too many unknowns and other drawbacks to this technology.

Mites in the brood are not killed, and so the smoke treatment must be repeated several times as bees and mites emerge. It becomes important, therefore, to determine what chronic smoking with tobacco or other plants might do to a colony. Given recent debates about the effects of smoking in humans, the prognosis is not good.

Too much smoke can also contaminate hive products. There is evidence that heavily smoking honey supers when removing them from a colony can give the resultant honey an off flavour. Two former NZ honey graders, Bob Walsh and Colin Rope, often used to record 'smoke taints' on grade sheets for honey presented to the Honey Marketing Authority.

Finally, there remain questions about disrupting the delicate balance of honey bee social structure, which relies on pheromones for internal control. Now that we know that smoke can interfere with the alarm pheromone, albeit only temporarily, what might it do to the more long term, and perhaps more significant, primer pheromone communication that takes place within a honey bee

colony?

In a similar vein, researchers reported at a recent Western Apiculture Society meeting in Tuscon, Arizona, about the use of essential oils for mite control. One brew, placed at the hive entrance, contained cinnamon oil, an emulsifier and sugar syrup. It disrupted the defensive system so much that "horrific robbing" occurred. Mind you, it's not hard to get robbing going if there is no nectar flow and you put sugar syrup at the hive entrance, cinnamon or no cinnamon.

References: Sanford,T (1997) Apis 15(8); Mussen, E (1997) U C Apiaries,July/ August

- Murray Reid, AAO, HAMILTON

HOMEPAGE GETS BETTER AND BETTER

As we suggested about a year ago in BeeFax, the lowering cost of Internet access in this country is making E-mail communication a very attractive option for beekeepers, especially those who sell products overseas. It seems like every day another New Zealand beekeeper comes on board.

If you are hooked up to the Internet, a big plus (in addition to E-mail) is the New Zealand Beekeeping Industry Homepage, created and maintained as a hobby (and obsession!) by Nick Wallingford, Tauranga.

In creating this homepage, Nick has done a marvellous job of publicising our industry, both within New Zealand and overseas. He's done such a good job, in fact, that he's now receiving recognition from computer industry commentators for the expert design and content of the page.

Recently Nick has added a couple of really worthwhile new features, including a NZ Beekeepers Bulletin Board (sort of an electronic discussion group), and a Beekeeping Ready Reckoner. This last item has to be seen to be believed. If, for instance, you want to figure out how much sugar and how much water you need to make up 10 litres of 64% sugar syrup, just fill in the appropriate blanks, and the Ready Reckoner does the rest. You'll find lots of beekeeping management calculations here, from the kgs. of nails you need for a given amount of supers, to the amount of paraffin you'll need to dip them. Now if we could just get the Ready Reckoner put on a hand-held calculator!

You'll find Nick's New Zealand Beekeeping Homepage at: http://www.beekeeping. co.nz. Check out the page's ever-expanding list of NZ and overseas beekeepers' E-mail addresses, and make sure to add your own. This list can be a very valuable resource for your business.

BEEFAX

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EU REQUIRES RESIDUE PROGRAMME

Over recent years, the European Union (EU) has begun setting maximum permitted levels (MRL's) for various residues found in food products offered for sale in EU member states. The move is a measure aimed at ensuring food safety within the EU. Residues for which MRL's have been set fall into groups such as antibiotics, insecticides, heavy metals, and such things as growth-promoting hormones.

These MRL's are already enforced within the EU for trade between member states. However, in a recent Directive (96/23/EC) they are now also to be applied to countries wishing to export products into member states.

New Zealand honey exporters have recently been made aware of this new Directive by their European importers. It must be emphasised, however, that the new requirement is not peculiar to honey, or to New Zealand. The Directive also applies to a number of products, including meat and seafood, from any country exporting the products to EU countries.

The EU Directive requires a national residue monitoring programme to be set up for each product in each country wishing to export to the EU. In our case, we need to put in place such a programme for honey. The meat and seafood industries in New Zealand are also setting up similar programmes.

The EU requires that the programme include a sampling and testing component, and a traceback and follow-up for any sample found to exceed the MRL in order to determine why the limit was exceeded.

According to the Directive, the residue monitoring programme must be carried out under the direct supervision of the MAF Regulatory Authority (MAFRA). The MAFRA is regarded by the EU as the recognised body in New Zealand for such programmes.

The NBA and Dr. Jim Edwards of the MAFRA are currently developing the residue plan for honey. Once the plan is completed, it will be submitted by the MAFRA to the EU for approval, and then implemented. The MAFRA will be required to report annually to the EU on the results of the programme.

Because New Zealand has a Bilateral Veterinary Agreement with the EU, our honey exports to member countries can continue in the meantime using current certificates (but not any new certificate requiring a residue testing programme to be in place). If difficulties are encountered by honey exporters, the MAFRA will arrange for the Veterinary Counsellor at the New Zealand Embassy in Brussels to intervene to facilitate clearance under the Bilateral Agreement.

It is hoped that once the residue plan is in place and we can sign the new certificate, export certification of honey to EU countries will become harmonised under the Veterinary Agreement, and we will finally be able to get

away from area freedoms of various sorts for different EU member countries.

- Ted Roberts, Apiculture Export Certification Manager

HOW WE DO SURVEILLANCE

If you're a beekeeper with an apiary in one of the main centres, or in various provincial towns, your beehives may be visited during the spring by a MAF Qual inspector. And if you've watched the inspector, you may have noticed that the work he/she carries out looks a bit different than the normal check for American foulbrood. That's because the inspection is part of the Honey Bee Active Surveillance Programme, and the inspector is looking for signs of an exotic bee disease.

The Honey Bee Active Surveillance Programme is a contract MAF Quality Management has with government to provide an early-warning of incursions of exotic pests and diseases. New Zealand is currently free of a number of maladies which plague beekeeping in most other parts of the world, including European foulbrood, varroa mite, tropilaelaps mite and tracheal mite.

Each year MAF Qual inspects 500 apiaries throughout the country looking for these pests and diseases. The apiaries are chosen for their proximity to risk areas (eg., ports, rubbish dumps and tourist spots). The apiaries are therefore usually in built-up areas, and often involve the inspection of hobbyist hives. A total of 38 localities are included in the inspection programme, and range from big cities such as Auckland and Wellington, to tourist centres like Mt. Cook and Queenstown. Lists produced by the computerised Apiary Register are essential in identifying the apiaries in these areas to be inspected.

When the inspector opens up a hive in the target apiary, the first thing he/she does is to find the queen. This might seem a strange way to go about a hive inspection, but in fact it makes good sense when you realise that the inspector has to take a sample of 400 adult bees from the hive.

When the queen is found, the frame she is on is set aside. The inspector then shakes several frames of bees into the up-turned lid, knocks the bees to one corner, and then scoops up enough bees to fill about half of the 600g PET sample jar (just slightly bigger than the clear plastic jars beekeepers often use when packing honey).

The bees in the sample jar are immersed in saturated salt solution, and a code (including the beekeeper registration number, the apiary number, and a hive number) is written on the bottle label. The bees in the jar are then sent to MAF Qual's Invermay Animal Health Laboratory where they will be visually analysed for the presence of varroa, tropilaelaps and tracheal mites.

Next, the frame with the queen is put back in the hive and the hive is given a thorough examination for European foulbrood. The inspector looks for corkscrew-shaped larvae in the cells, and larvae with a yellowish discolouration and prominent tracheae. These symptoms are similar to those associated with Halfmoon Disorder, so in any case where symptoms are found, the inspector takes a sample and sends it to Invermay for microscopic analysis and possible plate culturing.

In each case, regardless of whether EFB symptoms are present, the inspector will also take a sample of 3 larvae approximately 72 hours old (c-shaped, but filling the contents of the cell). These samples are being used to establish a

background population of larvae for a research project which is developing a PCR test for detecting EFB in bees and bee products (see March 1996 BeeFax for an article on PCR technology written by Robert Rice).

The last activity the inspector carries out would really look strange to the casual observer, and even to the seasoned beekeeper who has spent years working hives. The inspector finds a patch of capped drone brood, and inserts the tines of a cappings scratcher into the side of the brood cells. A cappings scratcher is a device with sharp, thin, steel prongs that is normally used to remove cappings missed by mechanised uncappers.

In this case, however, the scratcher makes an excellent device for removing large numbers of drone pupae for inspection for varroa and tropilaelaps mites. Both mites show a preference for drone brood for rearing their young.

It generally only takes about 3-4 insertions of the cappings scratcher to remove the 100 drone pupae required for this part of the inspection. Needless to say, if any mite-like material is found in any of these drone pupae, a sample is collected and sent to Invermay for further analysis.

BROOD PHEROMONES AND ROYAL JELLY

The term "pheromone" is now a part of modern beekeeping vocabulary, and research on pheromones has changed the way we view bee behaviour and colony management. However, you could be forgiven for being a bit vague on the actual meaning of "pheromone", since it has only recently been added to many popular dictionaries. So to give it its proper definition, a pheromone is a chemical given off by one individual that controls the behaviour of another of the same species.

Researchers are continuing to find out more about the pheromones produced in beehives. Royal pheromone, or "queen substance", was one of the first of these substances to be identified. Much of the work on royal pheromone was done by French researchers, and now another, Dr. Yves Le Conte, has identified what he calls "brood pheromone."

Like royal pheromone, brood pheromone is a "primer" chemical. That is, it indirectly results in changes in other individuals by influencing chemical changes, in this case hormonal production of the endocrine system of bees. It is brood pheromone, for instance, which helps cause 3 day old larvae developing from fertilised eggs to either become queens or workers.

Brood pheromone keeps workers from developing their ovaries, something originally thought to be totally controlled by royal pheromone. Brood pheromone also helps worker bees recognize queen cells, as well as stimulating the development of hypopharyngeal glands in workers. It is these hypopharyngeal glands that produce royal and worker jelly used to feed larvae.

Brood pheromone is a mixture of 10 simple fatty aliphatic esters. These are emitted by the brood in large amounts as the cells are capped, and in different concentrations varying with the age of the larva. Evidence has been found for specific actions for three of these chemicals. Methyl stearate produced the best acceptance of queen cups, methyl lineolate caused more royal jelly to be deposited in queen cups, and methyl palmitate produced heavier larvae.

This is all very nice for the scientists, but the obvious question is does this research have any practical applications? Well, with a bit more work it may be possible to find a recipe so we can use these chemicals to increase the

acceptance of queen cell cups and the amount of royal jelly produced for harvesting by the beekeeper.

The findings also suggest that banking queen bees in broodless colonies, as is sometimes advocated, is not such a good idea. You need lots of young bees with well developed hypopharyngeal glands to produce the royal jelly that will be fed to the queen bees. And since brood pheromone is instrumental in stimulating the development of these glands, the presence of uncapped brood in these colonies would seem to be essential.

Reference: Sanford, T (1997.)APIS 15(8)

- Murray Reid, AAO, HAMILTON

ARTHRITIS, DRUGS AND BEE VENOM

Arthritis is an inflammatory disease of the joints, the consequence of which is often intense pain, restricted movement and disfigurement. Arthritis is a leading cause of disability in humans (and animals). The causes of arthritis are many, but the basic ones are injury, and wear and tear as joints age or are abused. The result is inflammation and thickening of joint linings, erosion of cartilage, brittle bones, and fused joints.

In arthritis, an inadequate supply of oxygen kills tissues, impairing the body's filtering system (lymph system). This leads to an accumulation of dead cells that further impair circulation, causing narrowing of blood vessels and finally bony overgrowths in the joints (eg, spurs).

Typically, treatments such as exercise, massage, and heat therapy have been used to aid in the control of arthritis, as these treatments improve circulation and the flow of oxygen to the affected joints. Modern therapies include the use of anti-inflammatory drugs, including non-steroidal drugs (such as tylenol, ibuprophen, and mortin) and steroids (such as cortisone, prenisone, and dexamethasone).

Both types of drugs are known for their side-effects. The non-steroidal drugs often cause irritation to the stomach (gastric system), while the steroidal drugs, particularly after extended use, can cause serious affects to glands such as the adrenal and pituitary glands. Other complications caused by steroidal drugs include impotence, edema, excessive hair growth and cardiac irregularities.

During the pass few years, several new non-steroidal anti-inflammatory drugs have been developed that relieve pain and reduce the swelling in joints affected by inflammation. These new drugs include ibuprofen, fenoprofen, naproxen, ketoprofen, sulindac, piroxicam, suprofen and tolmetin. However, as a beekeeper you should think very carefully about the use of anti-inflammatory drugs. Reports are beginning to emerge that some or all these drugs can lead to the loss of a person's immunity to bee stings.

On the other hand, bee venom therapy is often described as a cure-all for arthritis. This may be an over-exaggeration. However, there is some scientific basis to support such claims. Bee venom is a mixture of proteins (enzymes and peptides) with some unique activities.

The enzymes in bee venom are hyaluronidase and phospholipase A. These enzymes break down the tissues at the site of the sting, allowing the venom to spread quickly, and ultimately leading to cell death around the sting puncture.

The three major peptides in bee venom are melittin, apamin, and peptide 401. Melittin and apamin stimulate the body's adrenal and pituitary system to produce cortisol, the body's own natural steroid. These natural steroids do not produce the medical complications of the synthetic steroids. Peptide 401 is truly amazing, since as an anti-inflammatory agent it is 100 times more effective than cortisone.

Bee venom is another example of the potential value of hive products in addition to honey. As science continues to investigate the properties of these products, it becomes more and more likely that beekeeping in the future will be about harvesting raw products for the pharmaceutical industry, not just simply whipping off another box of New Zealand's favourite breakfast spread.

- Robert Rice, AAO, LINCOLN

GET A BILL OF SALE

Anyone who is buying used hives or beekeeping equipment should insist on receiving a "Bill Of Sale". And if the transaction involves very much money at all, you should also insist on receiving an "Affidavit Of Title".

A Bill Of Sale is a written document signed by the seller which shows that the seller has transferred ownership of specific materials to the buyer. An Affidavit Of Title is a written statement, signed and sworn to by the seller, which shows that he or she is the lawful owner of the goods they are selling, and that there are no liens or outstanding debts on the goods.

An Affidavit Of Title is desirable because:

Swearing to a false affidavit is a serious offence, so the buyer should feel confident that there will be no future problems over ownership,

Buyers may need written proof of their ownership when they resell the hives (this is very important if the boxes are branded),

Written proof may also be needed for tax claims, if the goods are to be offered as security, or for administering orderly disposal of an estate.

So long as a Bill Of Sale contains the necessary information and the seller's signature, it is legal, and it does not have to be written in any special form. A Bill Of Sale scribbled out on the back of a used envelope, if it has all the required information and the seller's signature, is adequate. A letter from the seller with the necessary information and his or her signature is also acceptable. However, a properly drafted legal document is best.

The seller and buyer of used hives and equipment when the transaction involves a lot of money would be well advised to have a lawyer prepare a contract and a Bill Of Sale for them. For transactions involving less substantial moneys, where the buyer and seller are not willing to hire a lawyer, the seller and buyer can write up their own documents or use a draft "generic" form available from MAF Quality Management (contact your local AAO for details).

When using a generic form be sure that no spaces are left blank (draw a line through any spaces that are not used), and pay close attention to accurately filling in the blank spaces. Alternatively, use the form as a guide to rewrite your own Bill of Sale.

A Bill of Sale should contain the following basic items: 1) the date of transaction; 2) a usable, specific description of the items transferred; 3) a statement that the seller owns the items; 4) a statement that the seller has transferred ownership and possession to the purchaser; the name of the purchaser; and, 5) at the bottom, the signature of the seller.

When describing the goods for sale, give a complete description. For example, the words "20 hives of bees" is inadequate, and such descriptions have led to problems in the past. A better description would be as follows:

"20 hives of bees made up as follows --

15 hives of bees, each containing two full depth brood boxes

5 hives of bees, each consisting of one full depth brood box

Each hive contains a 4 or 7 litre division board feeder

Each hive contains a floor board, a solid inner cover and telescopic lid covered with galvanised iron

Each brood box contains a minimum of 9 drawn combs, unless it contains a feeder, in which case it will contain a minimum of 6 drawn combs

40 full depth boxes with 8 drawn combs per box

30 three-quarter depth boxes with 8 drawn combs per box

20 queen excluders

Some of the boxes may bear the brand X030."

Other points that should be covered include:

Whether the sites are part of the transaction (subject to landowner's permission), or whether the hives are sold subject to removal, and who is to remove them.

If the hives are sold with a honey crop on them, a minimum amount should be specified. Problems have risen in the past when a "box of honey" was verbally guaranteed on each hive, but when the season didn't produce a box of honey, the agreement, according to the seller, was meant to mean whatever was on the hives!

Method and time of payments and penalty clauses for default of payments.

It is also essential that you include in your Bill of Sale a provision for loss of hives infected with American foulbrood. Too many buyers (and even some sellers) have been burnt (literally!) by not putting this important detail into writing. Some of the options exercised in the past include:

As is where is, with the buyer taking all the risks. Obviously this option would reflect the history of the hives, or the price paid, or the desire to acquire the sites and so on.

If purchased during the winter, then the seller may agree to replace or refund diseased hives up until 30 September or some other agreed date. The issue of validating any disease found also needs to be included. The seller may accept the buyer's word, may wish to view the infected hive personally, or arrange for a third party to inspect the hives under claim.

If purchased during the spring, then liability could be limited to the buyer's inspection, or MAF inspection, etc.

- Murray Reid, AAO, HAMILTON

POR-15 RANGE OF PRODUCTS

POR-15 Rust Preventative Paint is an anhydrous rust killer and paint, which should have plenty of uses in the honey house. It doesn't contain water, and in fact uses moisture present in the air, or on the surface being painted, to cure.

The distributors of POR-15 claim it is the best rust killer and preventative paint around, as it dries to a rock-hard ceramic-like finish that won't crack or peel, even on flexible surfaces. It is extremely effective as a metal filler and has excellent spreadability -- a little goes a long way. One litre will cover 9.2m2. It can be applied directly to rusty surfaces but obviously the cleaner the surface the better.

If you want to apply Rust Preventative Paint to smooth metal surfaces, aluminium or galvanised steel, you need to use Metal-Ready, a pre-paint cleaner and etcher. You'll also need POR-15 Solvent for cleaning up, thinning and for spraying.

If you only want a small amount to try, then POR has a starter kit for $16, (plus $3.50 p&p) which includes a 120 ml screw top jar of Rust Preventative Paint, in silver or black, (enough for 1.1m2), 240 ml of Metal-Ready, 2 paint brushes and a pair of rubber gloves. Or you can buy the TOR-15 Six-Pack for $56. 50 (plus $4 p&p). The jars are 120 ml, but you can order silver or black or a combination.

POR-15 Rust Preventative products are available from Permanent Painted Coatings, 1 Tiki Place, PO Box 1923, Palmerston North, (06) 355 1180, fax 355 1545 or 0800 428 282. Write or phone for their catalogue.

- Murray Reid, AAO, HAMILTON

BEEFAX

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LET'S CATCH THE BEEHIVE THIEVES

Imagine working really hard, through a very difficult spring, doing everything possible to ensure that you have the very best quality hives when the kiwifruit comes into bloom. And then imagine going out to an apiary just before dark to fill a pollination order, only to find that the hives aren't there any more.

Or imagine doing all that work and shifting the hives into an orchard. But when it comes time to make your syrup feeding round to help increase the pollen gathering of your hives, you find that a number of them have gone missing while in the orchard.

Unfortunately, at least four Bay of Plenty beekeepers have so far experienced either one or both of these nightmares this pollination season, and the number of stolen beehives continues to grow.

Judging by the timing, it would appear that one or more persons is stealing beehives to be used elsewhere in pollination. And for a lazy and dishonest person, the rewards might seem tempting, since pollination fees in the Bay are running at anything from $70-100 per hive.

The obvious question, though, is who would do such an evil thing, and along with it, what's to become of the beehives once the pollination season comes to an end? That's where I think BeeFax readers can be of help.

While we can always hope that the police will sort this one out, the mind boggles at the thought of the Te Puke desk sergeant receiving calls from concerned citizens who've seen a truck loaded down with beehives driving around in the middle of the night! Because there's so much of this sort of activity by legitimate beekeepers in the Bay of Plenty at this time of year, the real culprits can just about drive around without any fear of being noticed.

Or should we say, without being noticed by non-beekeepers. Beekeepers who are involved in the pollination trade, and commercial beekeepers elsewhere who keep an eye on the territory surrounding their honey production apiaries, can really help by noticing strangers in their midst, either shifting beehives out of pollination, or establishing new apiaries where there weren't any before.

They can also look out for some of the distinguishing features of the hives which have so far been stolen. Dale Gifford from Paengaroa reports losing 41 hives from 4 different locations, just before pollination. The hives include 5 hives belonging to the Bay of Plenty Polytech, which Dale was managing on behalf of the local NBA branch. Dale's hives are all 3/4 depth gear, with distinctive migratory lids (they have a flow-through ventilation system). Dale's registration number (D225) is branded into his boxes just below the hand-holds.

Arataki Honey in Rotorua has also lost two sets of hives (22 in total) from two

orchards on Te Matai Rd in Te Puke. Arataki hives are familiar to most beekeepers in the north of the North Island, and their registration number (E1) is branded into many boxes.

Dave Klausen from Turangi has also lost two lots of hives. Twenty-three hives went missing from an orchard on John Bird Rd (just off Te Matai Rd., where Arataki's were stolen), and another 5 recently were lost in Bethlehem, just north of Tauranga. Dave's brands (D239 or H615) appear on the hives.

Finally, Peter Townsend, from Paengaroa, has also lost two hives, from (you guessed it!) Te Matai Rd in Te Puke. Peter uses a very distinctive migratory lid with large wooden ends, and also keeps a queen excluder between the first and second brood chambers of his pollination hives. Peter's registration number is D442.

If you see any of these hives (or any hives of any kind which appear to be out of place), by all means contact your local Apicultural Advisory Officer, who will check the Apiary Register, and if necessary, pass on your information to the police.

If you're a beekeeper doing pollination in the Bay of Plenty area, we'd also suggest you contact your grower clients and ask them to check their neighbours' properties, once the pollination season is over. The thieves may be lazy enough to just leave the stolen hives in the orchards, in which case we'll be able to return them to their rightful owners.

If anyone is going to find these criminals, I think it's going to be conscientious members of our own industry. So keep your eyes and ears open, and let's catch those beehive thieves!

AND ITS GOODBYE FROM THEM....

Two Apicultural Advisory Officers have decided to hang up their hive tools and have resigned from MAF Quality Management (MQM). Robert Rice from Lincoln, is returning to Brisbane with his family to take up a position at the University of Queensland in the Molecular Biology Department. And Cliff Van Eaton is leaving after the Christmas/New Year break.

Robert joined our team in May 1995 and has been an asset to our group, even though he has been trying to finish the dreaded PhD as well as manage a full-time job in MQM. That was always going to be a tough ask and we admire Roberts' application to his job, the work he has put into his doctorate thesis, and his contribution to the apiculture unit and our beekeeping industry.

Robert's two major roles, as apiculture business coordinating officer for the South Island and as the Canterbury region Apiculture Advisory Officer, have both been reassigned. The role of South Island business coordinating officer will be carried out by Dave Grueber of MQM, Blenheim. The role of Apiculture Officer will be assumed by Phil Sutton, MQM Timaru.

Phil has for some years provided support to the apiculture business and his current duties include Honey Bee Exotic Diseases Outbreak Response Process Manager for the South Island, apiaries surveillance officer, and apiary inspector for the AFB contract.

Phil has also travelled to Canada to study exotic bee mites, and to Australia to study European foulbrood and apiary management practices. Phil is the first point of contact for Canterbury beekeepers for consultancy, bee diseases and

issues other than the register. He can be contacted on (03) 688 9184 fax 688 9181; E-mail suttonp@timaru.mqm.govt.nz.

The Apiary Register for Canterbury will remain at the Lincoln office and will be maintained by the Registrar, Barbara Tappenden, with assistance from Linda Hagan. David McMillan, Apiculture Officer, Invermay, will continue to cover the Southland-Otago area. Dave Grueber, Apiculture Officer, Blenheim, will continue to service Marlborough, Nelson and the West Coast.

Cliff Van Eaton is also leaving MQM, after working for MAF for some 12 years in two stints (first in Gore and Whangarei, and since 1991 in Tauranga). Cliff is going into private enterprise where we know his skills will be well utilised. We understand that he'll continue to work in the beekeeping field, so he won't really be lost to our industry.

Both officers will be sorely missed by the rest of us here at MQM. Cliff's duties, like Robert's, will be redistributed amongst other staff, including those involved with delivering apiculture services on a part-time basis. No doubt we'll still keep in touch with the guys. Brisbane's not that far away, after all, and Cliff will continue to live in Tauranga.

- Murray Reid, AAO, HAMILTON

MQM...WHERE TO FROM HERE?

As you are probably aware, the Ministry of Agriculture (MAF) is involved in a major restructuring exercise. There are currently 2 processes underway. One involves the amalgamation of MAF with the Ministry of Forestry to form the new Ministry of Agriculture and Forestry (also to be called MAF). The second process is the removal of contestable services from the core government department. These services include most of the apiculture services currently provided by MAF Quality Management (as well as dairy, animal health, and plants services).

All of these services are likely to become part of a more commercial entity, still owned by the crown, but separate from MAF. A State Owned Enterprise (SOE) structure is one option being explored. As with any organisation, the success of the new entity will depend on the quality of the services and products it provides, and the customer demand for those services. Agricultural Quarantine will remain as part of the core MAF structure, and will not be privatised.

- Murray Reid, AAO, HAMILTON

WHAT'S UP IN NIUE

I recently had the opportunity to visit Niue and examine the state of the local beekeeping industry. Commercial beekeeping was established in Niue in the late 1960's by a former Waikato beekeeper, J. B. (Mack) Mackisack. He shipped over 600 screened hives to the island, and built hive numbers up to 1250 by 1971, producing 75 tonnes of honey (60 kg/hive). Unfortunately, following his death in a road accident in 1973, the industry has steadily declined.

There are now 370 live hives located on 21 sites. Dead hives are also present on some sites, although rapid wax moth invasion makes it impossible to determine the cause of death. Sacbrood is present at a low level, and three hives appeared to be suffering from AFB. Samples were taken of both bees and larvae for laboratory analysis. Several importations of New Zealand queens

were made in the 1970's and 1980's, and the bees appear identical to New Zealand commercial stocks.

During the 1990's, honey production has averaged 10 - 12 tonnes per year, from around 400 hives. This is an average yield of around 30kg/hive, very similar to New Zealand production, but well below that achieved by Mr Mackisack. The Niueans are unsure if this is the result of differences in hive management, or the widespread clearing of bush (and nectar sources) for taro production. Undoubtedly production could be improved with more intensive hive management, but whether it could match the levels of the early 1970's is unclear.

The Niue Development Bank is currently considering options for future management of the business. One possibility is the sale of the holdings to an expatriate (non-Niuean) beekeeper, if a buyer can be found. Anyone wanting more information on beekeeping in Niue is welcome to contact me at the Pukekohe MAFQual office (ph. 09-238-5255).

- Paul Bolger, AAO, PUKEKOHE

WHITE CLOVER AND EFB

Peter Stace, writing in the October issue of the Australasian Beekeeper, suggests that EFB is worse on white clover flows because white clover pollen is deficient in amino acids such as valine and iso-leucine. Peter reports that NSW beekeepers who chase clover crops, either to build up their bees or gather a surplus honey crop, find their bees suffer from chronic or severe outbreaks of EFB. The outbreaks are such that they need to feed antibiotics with the attendant likelihood of residues.

Peter says that EFB is associated with poor nutrition in bees, but pure clover pollen may not be all that good despite a high protein content of 22 - 25%. The low iso-leucine and valine content of clover pollen may reduce the overall usability by 35-40%, giving it a digestibility of a pollen with only about 16-18 % crude protein. This is low for an expanding or honey producing colony, and may well account for the reported higher incidence of EFB on clover crops.

The problem can be reduced somewhat if pollen from other sources is available. Or beekeepers could feed a protein supplement with these amino acids added or included. If EFB ever becomes established in NZ we may see similar problems, although we probably don't have the expanse of pure clover pasture, without any other pollen sources nearby, as is perhaps the case in areas of NSW.

- Murray Reid, AAO, HAMILTON

NEW EDITION OF BEEKEEPING FAVOURITE

When it comes to bee books, there are the long, scholarly tomes, the never-ending editions of the ABC and XYZ, and even a whole host of how-to-do-it's from other parts of the world. But really, at the end of the day, New Zealand is most fortunate to have such a good, straight-forward bee book as Practical Beekeeping in New Zealand.

Perhaps we just take Practical Beekeeping in New Zealand for granted, even though it is one of the very few books of it kind ever written for New Zealand conditions. The book's continuing popularity, however, especially overseas, shows just how good a beekeeping text it is, no matter where you might happen to live.

It's that continuing popularity which has led the book's author, Andrew Matheson, and its publisher, GP Publications, to come out with this new edition, the third since 1984.

The book has a new, shiny white cover, and appears to be thinner, but don't be fooled! There's lots of new bits; it's just that the thickness of the paper has been reduced.

The biggest, and most welcome change in this new edition is the use of colour pictures to help describe the symptoms of bee diseases. The two previous editions had black and white drawings and pictures. While they were useful, most beekeepers find that to distinguish between, say, sacbrood and AFB, you really need to have colour photographs.

Once upon a time, we used to have a colour AgLink on honey bee brood diseases, but now that the government no longer provides such resources, these colour pictures in Practical Beekeeping in New Zealand are a must. The colour rendition and picture quality are especially good in the photographs of AFB scale and the ropiness test (hands up all those readers who can't identify AFB scale!). There are also several excellent shots of sacbrood, and a great picture of a whole pile of those pesky chalkbrood mummies.

Andrew has also added sub-sections on the Biosecurity Act, the Commodity Levies Act and the Pest Management Strategy for American foulbrood, although with the continuing changes facing the beekeeping industry regarding government services, some of what's in this section will be out-of-date before long. Internet resources have also been added, including information about New Zealand's very own (and deservedly famous) New Zealand Beekeeping Homepage.

The new edition of Practical Beekeeping in New Zealand is available at all leading bookstores. It would make an excellent Christmas book, especially if the beekeeper in your household doesn't already have a copy. And even if you do, the colour pictures make it worth replacing your older edition with this sleek, new, white-covered model.

WASP NEWS

Fenitron Up-Date

At a recent meeting of people interested in wasps at Hort Research in Auckland, a representative from Elliot Chemicals, the distributors of Fenitron wasp baits, said his company is seeking registration for Fenitron (sulfuramid) as an insecticide for commercial users to apply to their own baits. Elliot Chemicals made a fish bait incorporating sulfuramid, but the product had to be kept and shipped frozen which added to the cost.

The company's experimental use permit is also about to expire, hence the move to market the insecticide on its own. They have sought a hearing at the December 1997 meeting of the Agriculture Chemicals Board, but it is doubtful whether their application will be processed by then. The next Board meeting is in February, which will be too late for this wasp season (assuming of course that Elliot Chemicals can obtain the label registration they are seeking).

Elliot Chemicals will be selling the product only through a few selected outlets and to commercial users. Beekeepers and orchardists would be regarded as commercial users. The cost of the sulfuramid will still be relatively expensive, but 30-40% cheaper than the old fish bait. Elliot Chemicals

envisages selling their product through such outlets as Fruitfed Supplies and stock and station agents. As the insecticide will not be pre-mixed, there must be a risk that some users will add the insecticide to a sweet bait, with possible consequences for nearby honey bees.

That's A Lot of Wasps!

It seems that in the honeydew forests around Nelson at least, wasps create the biggest biomass. There are on average over 10 nests per hectare with around 10, 000 workers in each nest. These wasps have a biomass of 1 kg/ha/year. This is more than all the birds, stoats and rodents put together.

New Documentary of Wasps in NZ

For the past 2 years, the BBC, in association with a NZ company, has been filming the effects of wasps on insect and bird life in the Nelson Lakes area. The film follows the life cycle of wasps, which they call "bandits of the forest" (that's also the working title of the documentary). It also shows how wasp numbers build up in the honeydew forests and the terrible toll wasps take directly on the insect life and indirectly on bird life that depends on the honeydew. The film follows the life of a breeding pair of kaka named Knuckle and Duster (some scientists obviously still have a sense of humour!)

The documentary has the most magnificent close-up action shots of the common and German wasp, and also the parasitic wasp Sphecophaga which has been introduced to try and control them. You see wasps being born, being parasitised, building their paper nests, hunting for prey with ruthless efficiency and just generally being wasps. The parallel action scenes of the kakas' struggle against the wasps, stoats and the normal cycle of the beech trees that they rely on for food in the form of berries is also magnificent.

If I have a criticism of the film script, and it is really a minor one, it is the use of emotive language that is somewhat prejudicial against the wasp. The wasp is made out to be the villain in the piece, and is frequently referred to as a bandit. There is no doubt that both the common and German wasp are having a tremendous effect on the ecosystem in the beech forests, but really they are just being wasps and "doing what wasps gotta' do".

Wasps are prime predators of other insects and scavengers of meat, as well as consumers of sugar products such as honeydew. It is rather sobering, though, to see wasps take on moths and a huge stick insect many times their size, quickly kill and then dismember the bodies. Also the number of wasps in any given area is staggering, especially to anyone who has not been in honeydew forests during late summer.

The film is currently with TVNZ, but there is no word on when they might use it. Apparently they are in the process of cutting it to fit in with our long commercial breaks, but the programme will still go for an hour, so it will most likely fit into a time slot like "Our World". What's the bet that TVNZ shows it over the holiday period when no one's watching?!?

- Murray Reid, AAO, HAMILTON

ENVIRONMENTAL "ISO"

You've heard of the quality systems called ISO 9000. Well, there is now a new boy on the block called ISO 1400. The ISO 1400 series is about environmental management standards and covers environmental labelling and claims.

"Green" consumers are on the rise and so are product labels which claim that the contents are environmentally friendly. At the moment, consumers have some protection for products approved under Germany's "Blue Angel" or New Zealand's " Environmental Choice" programmes. Such products must meet a stringent set of criteria and be subject to audit by independent parties. However, there are a number of self-declared labels or claims made by manufacturers, or "report card" labels which present information about environmental aspects.

The new ISO 14000 series will have 6 guideline series in total, but the 3 guides on self-declared claims (14021-14023) will have the most effect on manufacturers:

ISO 14020 contains principles which will apply to all environmental labels and claims.

ISO 14021 is about to be published and will harmonise self-declared claims by providing general guidelines for making the claims and definitions for terms used. Claims must be accurate, verifiable and relevant to the product.

ISO 14022 is still at a draft stage, and indicates the product contains recycled material and the product itself can be recycled.

ISO 14023 has just begun to be drafted and is expected to contain requirements for testing and information to substantiate claims.

ISO 14024 lists requirements for third party assessment or auditing and will become a formal Draft International Standard early in 1998.

[Source: Food Technology in New Zealand, February 1997]

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