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HortResearch launches IPM testing programmes for varroa control

By Mark Goodwin Hort Research Ruakura

HortResearch has been asked to develop and test three different integrated pest management (IPM) programmes to control varroa in New Zealand.

In other areas of agriculture, integrated pest management (IPM) has been one of the ways New Zealand and other countries have been able to reduce pesticide use. Traditional pest control involves applying a small number of chemicals at a prescribed time, regardless of whether the pest is actually present. IPM is different because controls are only applied when the pests are present, and a variety of suitable techniques are used to keep pest populations below the level where they cause economic damage. It aims to increase the effectiveness of a control programme, reduce the cost and amount of pesticide used, and lessen the chances of the pest becoming resistant to the control methods used.

One of the IPM programmes we will be testing for varroa will rely on synthetic chemicals, while a second will use a combination of synthetic and organic chemicals. The third will rely entirely on organic chemicals.

Synthetic chemicals are described as those "not found in nature" and organic as those "found in nature". The programmes will be tested both in cold and warm locations in the upper North Island where varroa is already present.

The development of these programmes will be as much a learning experience for us as it is for beekeepers currently implementing their own varroa control programmes. HortResearch will publish regular updates on the IPM trial programmes in the New Zealand Beekeeper. The updates will include descriptions, what sampling we will be doing, the results of the sampling, an explanation of what treatments we apply, the reasons we choose them, when they are used and what their effects are.

An estimate will also be made of the cost and time taken to carry out each step of the programme. We hope that keeping beekeepers up-to-date on our successes and failures will assist them in developing their own programmes.

This first update explains what we intend the three programmes to look like. The initial design will be based on what we know of varroa control programmes overseas. It is, however, likely that the programmes will be altered during the year on the basis of the varroa sampling we will be doing.

Our control strategies will be designed to meet a number of criteria:

1. Minimise pesticide use.

New Zealand beekeepers have long adhered to the philosophy of "clean and green" in their hive management. In keeping with this, we will use as few pesticides as possible.

2. Minimise costs.

Obviously, any programme needs to be cost-effective or it will not be useful to beekeepers.

3. Minimise the potential for residues in bee products. As with all agricultural production, we need to be careful that the bee products from our hives do not contain pesticide residues.

4. Minimise varroa resistance to treatment methods.

For each chemical we choose, it is important to ensure resistance does not occur as a result of the way it has been used. We need to learn from overseas experience and not use methods that produce resistance.

- 5. Maximize the programme's effectiveness The effectiveness of the methods used in controlling varroa is obviously important.
- 6. Minimise risks of hive and production loss. Because we are still learning how to control varroa, we will try to be cautious in our approach.

Control methods

The basis of the control programmes will be a spring and an autumn treatment for varroa. In each programme, the spring and autumn treatments will use different compounds belonging to different chemical classes to reduce the possibility of varroa becoming resistant to the chemicals.

Because the number of chemicals currently registered for use to control varroa is still small, we may have to apply for experimental-use permits to use additional chemicals..

Because the upper North Island is still in the acute phase, there are likely to be large numbers of varroa invading managed hives from feral colonies. We will use chemicals offering protection rather than just control. In other words, we will have to use chemicals that remain active in hives for a number of weeks so invading mites are killed, rather than using chemicals to kill mites present in the hive at the time of application.

The plans for the control programmes are as follows.

1. Synthetic programme

Bayvarol will be used in the spring and possibly Apivar® (armitraz) in the autumn, after the honey has been removed.

2. Synthetic/organic programme

A Bayvarol treatment will be given in the spring and a formic acid treatment in the autumn.

3. Organic programme

This treatment will consist of a formic acid treatment in the spring and a thymol or oxalic acid treatment in the autumn.

If necessary, further chemical controls will be applied during the summer.

Sampling

As well as controlling varroa with chemicals we will sample the hives for post-treatment mite levels to ensure the controls have been effective. The sampling will also ensure varroa populations in the hives do not reach damaging levels between the spring and autumn treatments.

The sampling will be carried out more extensively than would normally be required by beekeepers.. This is because we want to show how effective or otherwise the programme has been. Also, because we are in the acute phase of varroa, large numbers of mites may invade the colonies and varroa populations will therefore expand much faster than they would normally. We will be sampling on a monthly basis through the spring, summer and autumn.

Most beekeepers in the acute phase only need to sample pre and post-treatment (spring and autumn), and mid-summer (to ensure mite levels have not built up too quickly).

Because we only need to detect high levels of mites, we do not need to use a method that has high sensitivity. We have decided to use a method of medium sensitivity but high reliability. The method chosen is the sugar shake.

Economic thresholds

The economic threshold is the level of mite infestation that will result in an economic loss greater than the cost of treating varroa. Economic thresholds have yet to be established for varroa in New Zealand, so we will use those that have been developed overseas. However, because these vary considerably, we will use the most conservative value (1000 mites/hive). We will treat any colony that has more than 1000 varroa, irrespective of when this occurs.

Timing of treatments

The spring treatments will be applied approximately six weeks before the honey supers are placed on the hives. The autumn treatments will occur as soon as the honey supers are removed. If varroa levels build up too quickly in the autumn, the honey crop may have to be removed early.

In all other aspects, the colonies will be managed normally for honey production.



NBA library extends reference books

It was good to meet and talk with lots of National Beekeepers Association members at the annual conference in July. An information sheet about the NBA library and how it operates was on the display stand and is available by e-mail, fax or post to any beekeepers wishing to find out more. Those who already have a copy of the library catalogue can now add some extra titles.

From its Varroa Education budget, the Ministry of Agriculture and Forestry purchased six books and a video for the library.

- Mites of the Honey Bee, Webster and Delaplane
- Honey Bee Pests, Predators and Diseases (3rd ed.) Morse and Flottum
- Living With Varroa, Matheson
- New Perspectives On Varroa, Matheson
- Varroa: Fight the Mite, Munn and Jones
- A New Varroa Handbook, Mobus
- CONBA, varroa video, Ritter

There is no loan fee for borrowing any of the above, only postage to reimburse.

Trevor Cullen has also donated a copy of A New Varroa Handbook to the library and three new books have been purchased from library funds:

- Natural Medicine From Honeybees, Kaal, Jacob C.
- · The Biology of the Honeybee, Winston, Mark
- Breeding Queens/Production of Packaged Bees/ Introduction to artificial insemination *Fert, Giles*

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Southerners look first-hand at varroa mite and forecast a grim financial future

A recent trip to Rotorua by a group of South Island beekeepers was one to be remembered, reports *STEVEN BROWN from North Canterbury.*

We were met at the airport by Russell Berry who had planned a full and memorable four days in sulphurland. After a half-hour trip to Russell and Annette Berry's Arataki Honey House, we went right into discovery time... looking at varroa through a magnifying glass was a first encounter with the mite for some of us from the Mainland.

In a hired mini bus we visited an apiary that had been treated earlier and tested the day before our arrival. This was to show us the results of Apistan in the hives. We enjoyed pulling the hives apart to look for varroa, but the mite was difficult to spot in hives with low infestation, showing us how easy it would have been for beekeepers in Auckland not to see it when it first arrived.

Our trip was depressing when everywhere we went we saw how bad the effects of the mite were on the profit line. Would we survive varroa if (when) it comes south, we started wondering.

Russell had asked us to bring the costs of running our businesses and then see whether profits would significantly outweigh the costs of treating varroa. After comparing our profits per hive, after wages, we don't believe South Island beekeepers can commercially survive. Our current profits are too low. So we started to do our homework, to see if we can survive the cost of the treatment on top of our current accounts and still pay ourselves a proper salary.

On the following day, we saw Dr Mark Goodwin's beekeeping department at Hort Research in Hamilton. He was full of information

and down to earth, practical wisdom to take home. He gave us a few novel ideas about ways to eliminate feral hives, then went on to tell us about some of the new research into organic acids to control the mite. He is trying to find ways to lower varroa-control costs but a lack of ongoing funding might put a stop to his research continuing.

Auckland beekeepers came down and joined us for tea at a magnificent BBQ put on by the Waikato Branch at the Lorimers. They told us what they had in mind to survive in beekeeping. The talk centred on the way they run their bees and their business with the mite problem.

It was disappointing that it was only because of the varroa that we got together like this. The talks were good value. Now, every hive has to pay its way and the northern beekeepers were optimistic they can survive varroa if they run hives better, lower their costs and increase production and profitability.

The last full day was spent doing the tourist trails with Russell and Annette Berry. In the evening, after a trip to the hot pools, we started a serious talk at supper time, concentrating on our costs and the bottom-line profit.

Most beekeepers will not survive if we keep doing things the way we have always done them. Profit has to go up by at least \$40 per hive just to pay for the treatment, if we want to stay in beekeeping. The conversation continued until about 2.30am. We talked about how we could get out of the business and keep money in our pockets or, if we stay in it, some methods of survival.

The Berrys were wonderful hosts, allowing all 12 South Islanders to stay in their house and treating us to fine food and excellent company. They had put in a lot of effort before we arrived, to put together a show of what many North Islanders live with every day.



AgriQuality consultant shifts camps

By Angela Crompton

The recent Buzz Weekend at Camp Rangi in the Pohangina Valley gave hobby and commercial beekeepers a chance to say farewell to AgriQuality apicultural advisory officer James Driscoll.

While driving from his Wellington base through the raindrenched, shrub-covered valley to the camp, it had occurred to James that the August 25-26 weekend was the anniversary of his appointment as an apicultural advisory officer. Six years earlier, he had arrived in the valley for the first time to meet and stay with the late Ted Roberts, an apicultural advisory officer, life member of the National Beekeepers Association and friend to many.

In 1995, James had just completed an MSc Hons (BioChem) degree at Waikato University and saw the position as a chance to use his skills in an area he was personally interested in. Since 1988, James, now aged 33, had been a hobbyist beekeeper.

The advisory role has taken him to apiaries throughout New Zealand, but mainly in the Southern North Island region. In 1998, when AgriQuality New Zealand was formed to join the government's state-owned-enterprise stable, James moved from an "officer" to a "consultant" and swapped the former "public service" role to a more commercially-focused agenda. Skills learned as a pre-university Wrightson stock and station agent helped him make the transition.

Working for AgriQuality is all about accountability, he says. "At the end of the day, we still maintained the relationships [with beekeepers] we had, but I think people make better use of our time now and so they gained more."

New Zealand's apicultural advisors have earned international recognition for their expertise. Passport stamps including Fiji, Samoa, the Solomon Islands, Canada, Australia, the Pitcairn Islands, Vanuatu, the United States, Japan and Mainland China, show some of the countries James has worked in.

Because of the work James and colleagues have contributed to, the Secretariat for the Pacific Community launched a Pacific Regional Apicultural Project. James' became involved with that, helping to introduce apiculture skills to member nations of the Pacific Community at both government, commercial and grass root levels.

The islands are still free from many of the pests and diseases New Zealand beekeepers must deal with and, to help keep them that way, some have borrowed New Zealand's pest management strategies. Asked how Pacific apiculture techniques differ from those in New Zealand, he says yearround warmth means hives need to be visited regularly.

"In New Zealand, we tend to have a winter down period and there are some months where you may not be at the hives."

Countries closer to the equator, while having no winter to contend with, typically experience a "wet season" and a dearth of nectar, meaning bees will starve if not regularly visited and given food supplements.

When the rain clears and the bees are working, propolis and honey are the main products, the latter including a variety with a unique citrus-type taste. Although a "foreign" food to indigenous populations of the islands, honey's natural



The temperate climate of Pitcairn Island clearly makes bees and their handlers, like AgriQuality apicultural consultant James Driscoll, right, comfortably relaxed..

sweetness makes it a popular one and the domestic market consumes what is produced.

Camp Rangi was probably James' final assignment as an apicultural consultant. He has now moved into a new arm of AgriQuality, becoming its Environment Laboratory business manager. The past six years are looked back on as a time "thoroughly enjoyed", but he notes the arrival of the varroa mite is putting increasing pressures on the beekeeping industry. It is important for common strategies against it to be maintained.

"I hope the industry works together and doesn't become divided over issues it will face in the future."

James has sold the 40 hives he owned in Palmerston North, his former base, but may end up getting some more to set up in Wellington. He is also happy to remain on the list of emergency-response contacts when others' hives need urgent attention.

"With the friends I have made in the industry, I'd like to assist where I can."

Industry code forming

Industry representatives met with the Ministry of Agriculture and Forestry's food advisors in Wellington last month to draft a beekeeping Industry Code of Practice..

The code will allow those who export product (or supply product to exporters) to draw up their Risk Management Programme under the Animal Products Act. Representatives ranged from producers through to exporters of honey and other bee products.

MAF's Animal Products Group project manager Glen Neal had drawn up a draft code of practice, a set of pre-requisites and a harvester declaration for the two-day workshop. The group suggested a series of changes to make the documents more workable.. The harvester declaration, in particular, was almost completely redrafted.

Glen Neal will now circulate revised versions of the documents to everyone who attended the meeting and a group of reviewers. Reviewers will also oversee a trial implementation, with the aim of having a Code of Practice template for members to use as soon as practicable.

- Jane Lorimer

From the colonies



Hawkes Bay

We can't afford to relax. American foulbrood has reared its ugly head again, with several hives infected in the Valey Road area, west of Hastings.

Also, in the Maerototara area, six hives had to be burnt. Among the first were some unregistered hives that created problems.

What action is allowable by AP2s and how does one get approval for further action? It's all in the Authorised Persons Resource Manual. An AP2 can encourage the owner to destroy infected hives and offer to help. This was done in these situations - where the owner could be established.

Someone was one-jump ahead however; as several alleged, unregistered hives were moved away before further action could be taken. There are two lessons in this:

- Try to do any investigation discretely and
- Get in contact with an AP1 as soon as possible.. Watch this space for further developments.
- Ron Morrison

Otago

Feedback from three local beekeepers who went on a threeday tour to see first hand the varroa infestation within the central North Island was received at a branch meeting on August 20.

The branch will be asked to take responsibility for the American Foulbrood auditing (PMS) programme within Otago again this season. Members are asked to consider if they want to become involved in inspecting other beekeepers' hives for AFB this spring. Last time the branch had a vote on this issue, we chose not to, although some inspections were carried out. If inspections in Otago are to occur this season, beekeepers need to participate.

Thirty new members have been welcomed to the branch. To those who can find the time (and interest) to attend meetings (and endure all the political work), interacting with other beekeepers is always rewarding.

Meantime, spring has sprung, get out there and get that first round done. More intensive beekeeping and business will be the way of the future.

- Blair Dale

Southern North Island

The bees have responded well to the mild winter and the clear fine days we have been experiencing during the last month. They seem to be well ahead in population and down a little in honey reserves. Pussy willow is in flower and willows are budding well, which could trigger early swarming.

Activity in such a large branch area continues as we wind up to spring.

Hobby groups and activities have been to the fore. Masterton Hobby Bee Club discussed varroa last month and the New Plymouth Hobby Club was planning a major seminar/forum on September 15 to educate and form strategies for varroa.

This is straight after a very successful Camp Rangi run by the branch to educate both hobby and commercial beekeepers. No matter how big or small, we all came away knowing more about our interesting obsession.

The next branch activity will be the Southern North Island Branch Spring Field Day on Saturday, September 29. Starting at 10am, it will be held at Robin McCammon's honey house in the Pohangina settlement, just north of Ashhurst in the Manawatu.

The programme will feature Gerrit Hyink talking on aspects of varroa management; a spring-feeding demonstration; a bring and buy with the branch taking a 5% commission; lunch and sausage sizzle and an afternoon of hands-on activities including preparing hives for spring, splitting and requeening.

Costs for the day are \$5 per person or \$10 per family. Tea and coffee provided.

- Frank Lindsay

Wanganui Beekeeping Club

The club held a training afternoon for newer members recently and combined this with August checking of the hives and swapping old supers for new ones etc.

The four hives received new supers, frames swapped over all without using any smoke. Everyone got covered with bees but no one got stung, even though one of the new chums had a bee crawl up inside his trouser leg and had to hurriedly go away to remove the exploring bee.

The club has five hives, located on a five acre block on the edge of the city. The hives provide training for the new Beekeepers and revenue for the club.



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Is the Wasp Parasitoid, Sphecophaga vesparum vesparum, Controlling Wasps?

Dr B J Donovan

Donovan Scientific Insect Research

In an article in the November 2000 issue of The New Zealand Beekeeper, Dr Nigel Barlow of AgResearch said there was no evidence the introduced wasp parasitoid Sphecophaga vesparum vesparum was responsible for the low numbers of wasps (Barlow 2000). He believed the three-fold annual increase in parasitoid numbers at Pelorus Bridge, Marlborough, he and others saw occurring (Barlow et al.1998), was not linked to a reduction in wasp numbers because the parasitoid was spreading out, not concentrating locally. Geographical barriers or lack of habitat would eventually half the parasitism' spread. Dr Barry DONOVAN of the Donovan Scientific Insect Research, Christchurch, offers another view.

Parasitoids can spread

For nearly every parasitoid that grows, one developing wasp is killed. Therefore, if the parasitoid population is tripling annually, the number of wasps killed must also have been tripling. If parasitoid numbers are tripling annually, there is no reason to suppose they would cease doing so in any one locality until hosts became too few to support such an increase.

Adult female parasitoids have forewings more than 5mm long (Fig 1), and when released outdoors their flight is strong and may be directed upwind (Donovan 1991). There are numerous examples of insects, both smaller and larger, moving great distances in a very short time. For example, a willow sawfly, first discovered in Auckland in 1997, had spread to Christchurch by 2000, and has now been found in Alexandra..

According to John Charles, an entomologist with HortResearch, the willow sawfly can fly up to 300km a year. Many insects have crossed the Tasman Sea from Australia to New Zealand and some now breed here, such as aphids (Close and Tomlinson 1975), and moths and butterflies (Fox 1978; Patrick 2000). There is every likelihood that wasp parasitoids can cross mountains and lakes, especially so with a nor'wester or southerly behind them.



Figure 1. A female wasp parasitoid, Sphecophaga vesparum vesparum, on brood comb of the German wasp. Note her welldeveloped wings extending most of the way down her abdomen.

During the late 1980s, I led a team from the Entomology Division of the former Department of Scientific and Industrial Research to distribute wasp parasitoids at more than 1000 sites over New Zealand. Had there not been suitable habitats or sufficient hosts, the parasitoid could not continue tripling its numbers. The converse of this is with insufficient hosts to maintain an annual tripling, then many wasps must be being killed, and perhaps the parasitoid has achieved the outcome for which its introduction was intended.

Parasitoids kill small nests

There is no evidence of wasp parasitoids having become established in the North Island, according to Dr Barlow. However, nests searched were large and selection pressure probably causes parasitoids to seek out nests started by queen wasps where the risk of wasp predation is minimal (Donovan 2000). The walnut-sized nests in Figs 2 and 3 are the least likely to be found by people because of their small size and a lack of workers streaming to and fro.



Figure 2. Walnut-sized starts to wasp nests to wasp nests hangi from the ceiling of a bumblebee nest box. A German wasp queen has built the nest on the left, a common wasp queen the nest on the right. Cells within the nests contain the first several dozen developing worker wasps. In Europe, nests of this size have failed to develop further after wasp parasitoids have attacked and killed the developing workers.



Figure 3. A German wasp queen on her first brood comb, which she has built alone.

Conversely, the nests most likely to be found are those that are biggest, and the biggest are the least likely to have been attacked by parasitoids, otherwise they wouldn't be so large. Research by Landcare Research has shown that just one parasitoid in a wasp nest halves the number of new queens produced (Beggs et al. 1992).

Walnut-sized nests contain just one small comb built entirely by the queen wasp. One parasitoid can attack and kill so many developing wasps the nest is destroyed. Fig 4 shows a comb with 39 large cells. At least 20 contain white and/or yellow parasitoid cocoons.



Figure 4. The comb from a queen wasp nest attacked by the wasp parasitoid. Of 39 large cells, at least 22 contain white and/or yellow parasitoid cocoons. The presence of a cocoon shows the developing wasp was killed. The attack rate on this nest was so high its development terminated.

There are many reports of wasp numbers dropping to low levels and where only an odd nest is found in areas where they were previously superabundant (Donovan 2000). This last summer 2001, beekeepers and others reported wasp numbers were low in most areas, but higher in some other regions. It would be surprising if one species of parasitoid was equally effective every year throughout New Zealand's widely disparate landscape and climatic regions.

Is the weather responsible?

As beekeepers know, rainfall and other weather patterns vary enormously over the country and have a major impact on honeybees and their honey yields. The effects can be quite localised. A yard at one end of a beekeeper's territory may produce high yields per hive, while one at another end yields will be low. Heavy rain can certainly drown small wasp nests in spring, but given the wide geographical spread of the country and the great differences in weather over this range, it seems unlikely that weather is responsible for the major reduction in wasp populations almost everywhere.

Parasitoid success stakes

Introducing the parasitoid was a good bet for biological control, Dr Barlow says, but only about 10% of such introductions work. However, those bio control agents that do become established raise the chances of a beneficial reduction in pest numbers to more than 30%.

Sphecophaga v. vesparum remains the only new agency of any kind known to be out there and killing wasps. I have introduced and liberated two other Sphecophaga in recent years (one liberated cooperatively with Landcare Research Ltd.), but there is not yet any evidence of establishment.

S. v. vesparum a wasp varroa?

Varroa is a terrible enemy of honeybees because it, and the viruses it transmits when feeding, disable or kill developing bee pupae.

The wasp parasitoid also kills developing wasp pupae, by eating them. A major difference between the two attackers is the varroa mite cannot fly and relies on other agencies to move it about. In nature, the mite hitches rides on bees to get from one hive to another, and when modern beekeeping practices move bees about, the mite goes along as well. Despite human efforts to limit its spread, it has colonised a huge area of the North Island in just over a year of its discovery.

With wings, the wasp parasitoid has a big advantage over varroa as it can fly itself from nest to nest. If Varroa can be so successful against bees with its disadvantages, imagine how successful the wasp parasitoid could be against wasps.

The way forward

Unfortunately, there remains no concrete proof the wasp parasitoid is responsible for fewer wasps.. For various reasons, bio control with one agent can break down. If however, bio control agents with different life cycles could be established, the stability of a wasp bio control system could be greatly increased.

Efforts to acquire a fourth agent I have targeted, the beetle Metoecus paradoxus, are unlikely to succeed unless more funding becomes available. Expenditure by other agencies, amounting to well over \$4 million of taxpayers' money in the past 10 years, has not put in place anything else to kill wasps on an ongoing, self-replicating basis. My call is for wasp research funding to be redirected away from areas that are not producing outcomes desired by beekeepers and the public at large, and into programmes with a sound theoretical base, a proven track record and at least some chance of achieving a permanent reduction in wasp numbers.

Funding could be directed towards collecting and importing new bio control agents. Teams of two could be sent to the northern hemisphere to excavate wasp nests and obtain new species of parasitoids to be couriered to the insect quarantine facility at Lincoln College. Once quarantined, bred and host-range tested, the insects could then be field released and assessed by the Nelson-based Landcare Research team.

Within 10 years, our wasps could be subjected to greater bio control pressure than they experience in any part of their home range in the northern hemisphere. The prospects for a long-term reduction in New Zealand wasp numbers would then be very good.

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Commercial and hobby beekeepers both serving common needs of bees

By Angela Crompton

Whether a beekeeper owns one hive or one thousand hives, the bees inside them need the same amount of care, says John Brandon, a commercial beekeeper from Wanganui.

He visited the recent Buzz Weekend in the Pohangina Valley, organised by the Southern North Island branch of the National Beekeepers Association for amateur and starting-out commercial beekeepers.

It makes sense for hobbyists and commercial operators to communicate and work along similar lines, John thinks. "I don't think there's two codes. We're all in it together . . . and looking ahead, we need more vigilance with disease and pest control."

He was the man behind the reformation of the Wanganui Beekeepers Club 19 years ago, attracting young people just starting out in the industry, and older people who had been beekeeping for a while but never joining a group.

Clubs keep beekeepers up to date with the latest on bee diseases and hive pests and good ways of dealing with them, he says. "Beekeepers are a lot more educated now - and need to be - about what they're doing."

John's beekeeping began in the mid-1970s when he was a tutor at the Flock House Training Institute, operated by the Ministry of Agriculture. In charge of adult training courses,



John Brandon, left, and his original beekeeping "mentor", Mervyn Farrington, share some stories at the recent Pohangina Valley Buzz Weekend.

he invited commercial beekeeper Mervyn Farrington to come and talk to the students one year.

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At Pohangina the other week, he does not mention how many students eventually put Mervyn's words into practice, but he was personally inspired and bought his first two hives off Mervyn.

"He's been my mentor in my early days. He has been the most significant contact, to help me into commercial beekeeping."

With the help of his wife Janice and their four children, John set up Canaan - "the biblical land of milk and honey" -Apiaries, operating 400 hives, which produce clover, manuka and orchard honey.

Despite moving into the commercial sector of the industry, John remains an active member of the amateur Wanganui Beekeepers Club and five or six years ago helped it set up a "scholarship" scheme, introducing new people into the industry.

Applications are invited from anyone interested in learning how to care for a hive and the successful candidate joins club members on regular field days. Held on a site where the club keeps its own six hives, hands-on exercises are held and eventually one of the hives is given to the sponsored person.

"Then we make up another [club] hive."

Now age 60, John is personally in the process of reducing his own hive numbers. "I'm getting older and when varroa comes down our way, I will be able to look after a fewer number much better.

"Having the honey shop based at home and having to deal with varroa when it comes, I felt I couldn't do my [400] hives

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3K52

Registration rules work for everyone By Angela Crompton

Rules governing the beekeeping industry are there for the benefit of everyone, people were told at last month's Buzz Weekend in the Pohangina Valley.

In an address on the national pest management strategy for American foulbrood, AgriQuality environmental business manager James Driscoll identified the importance of annual hive checks and registering each hive's location on the national database.

The latter has earned international recognition as one of the world's best epidemiological databases. When regularly updated, it allows everyone in the industry to check the details of an area's historic and recent beekeeping activities.

Under the 1993 Biosecurity Act, both hobbyist and commercial beekeepers must provide an ADR (annual disease return) for their hives. The COI (certificate of inspection) must be completed by someone suitably qualified and James urged all beekeepers to sit their DECA (Disease Elimination Certification Agreement) examination.

"You still need to enter into an agreement with the industry," he added.. "The exam just proves you have the skills to meet that agreement."

Beekeepers with the industry before the 1993 Biosecurity Act may resent being forced to obtain written confirmation of skills they knew they had, he noted. But he urged them to "enter into the spirit of the industry" so American foulbrood could be effectively controlled nationwide.

When an outbreak is reported, all hives in an area will be inspected. That task becomes easier when they are registered with a detailed location reference. "If there's a disease outbreak, there's a team of people out there, maybe people from the South Island who have never been to your area before and they have to get to your apiary."

Grid reference maps coded "NZ260s" are available for all regions and can be bought from for \$13. James gave a brief example of how to use the maps' numbered (kilometrereference) squares to identify the location of a hive.

"Start at the bottom of the map and move to the number to the left of the hive location and estimate its position before the next number: e.g. half-way between 80 and 81? Then 80.5.

"Then, up the map, choose a number just below the site and estimate the space of it before the number to the top of it. Between 43 and 45? Then 43.5." A useful way beekeepers could remind themselves about which line of numbers to start with was to remember to "go in the door before walking UP the stairs", he suggested.

Anyone still having trouble identifying on a map the correct location of their hives were urged to ask a fellow beekeeper, their local beekeeping branch or club, or to seek counsel from the AgriQuality office.

Because hives are often on land owned by somebody else, James asked beekeepers to provide a contact phone number on the registration form if landowners like to be contacted before strangers cross their land to inspect hives. "Access is legal, but it's not a matter of bull-dozing our way in."

Finally, hives must be registered under their owners' names, but if the hives are "managed" by someone else, it is appropriate for their name and contact details to be provided as well.



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New Zealand Beekeepers September 2001



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Frank's Hive Care

Frank Lindsay

In early spring, all normal colonies will have patches of brood on both sides of two or more combs. If there is no sealed honey and spare honey combs are not available, food will need to be supplied in some other way.

Emergency feeders

There are several methods that can be used to get syrup into a hive if you don't have a feeder. Dip a frame into a bucket of syrup; give it a bump to remove air pockets in the cells and put as close to brood nest as possible.

A messier technique is to slowly pour the syrup into a frame until all of the cells are filled.

Another method is to fill a plastic bag with syrup and seal it up. Place the plastic bag flat on the top bars and punch a small pinhole in the centre of the upper surface. Press down gently around the hole, until a well of syrup develops on top of the

 bag. Spill a little over the side to give the bees a trail to flow, add an empty super and replace the hive roof. The bees will climb up on to the bag and their combined weight will allow more syrup to be released.

If it's a strong hive, I also add two, 2 kg-honey containers of raw sugar to the top feeder. Encourage the bees into the top feeder by adding a little water to the edge of the sugar so the crystals partly dissolve. The bees quickly learn to bring in more water and will use the raw sugar for emergency use. Do not give them white sugar as this goes into a hard lump. Raw sugar, on the other hand, attracts moisture and stays freeflowing, hence the bees can use it. Don't use brown sugar as it causes dysentery.

Weak hives should only be given syrup, but can be assisted further with a frame or two of honey. Make sure it has come from a disease-free hive. Do a full brood nest check for AFB before taking excess honey off an adjacent hive.

Frames

Make up all your frames before introducing wax foundation. It shatters easily when cold (perhaps I'm a little hard on my gear) and will stretch when it's put into the hive, giving the frame a sagging appearance.

What sort of frames do you need?

Hoffman full depth frames are standard in New Zealand and can be used in both the brood nest and honey supers. However, quite a few beekeepers are changing to threequarter-depth supers as they are easier to lift when full of honey.

Hoffman frames are self-spacing and designed to be pushed together, giving the correct bee spacing between and around frames. In honey supers they are spaced wider, with just eight or nine frames in each one to make extracting easier.

The advent of varroa makes the interchange of frames between the brood nest and honey supers no longer an option because, no matter how careful you are when treating hives, a minute amount of chemical residue will gradually build up in the brood frame wax over time. So, keep honey and brood frames separate and use each exclusively for it own purpose.

Of course, there are other types of frames beekeepers have invented over the years. Those expanding into commercial production or when money is short, can make simplicity frames, using either staples or manually spacing the frames to get the bee space between them. Frames have also been made with thick end bars and thin top and bottom bars.

Manley frames can be used in the honey supers. These use standard top and bottom bars but have 43-mm wide, straightedged end bars and only require eight frames to fill a super. If all eight are put in a super, they get jammed in with propolis and are difficult to remove.

- If you are going to use Manley frames, try using six and placing two standard Hoffman frames, (widely spaced) in the centre of the super. This makes it easier to remove the full frames of honey.
- If you have the money and a good, fast, heavy flow, consider using plastic. I never thought I would say this, but I extracted three supers of manuka in plastic frames - cold (13degC). I just pricked them and put them through the extractor and nearly all the honey came out. Less damage was caused to the wax and overall, everything was quicker to extract. Plastic frames have a greater surface area of comb, so watch your back. A three-quarter super with 10 plastic frames weighs approximately 28kg - of which 20kg is honey. I have too much regard for my back to use full depth supers with plastic frames (maybe I'm getting a little old...)

Whatever type of frame you do choose, it's important it is the correct dimension and hangs straight in the super without any bowing. A competent woodworker can make most parts of a beehive but I recommend you purchase Hoffman frames rather than trying to make your own. Assembly of frames will be covered next month.

Things to do: Prepare for the new season's work: Sort out queen-raising equipment, feeding equipment, clear away grass and check for stores.

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Varroa surveillance, control and education continues

South Island Surveillance

The first round of South Island surveillance is almost complete. Approximately 100 beekeepers, trained and approved as Authorised Persons, have been inspecting hives since April. All but a handful of the 1865 apiaries targeted for inspection have now been completed, with no varroa found.

The Ministry of Agriculture and Forestry and AgriQuality New Zealand thank all those South Island beekeepers who have taken part in this programme. A full report on the work should appear in the October *New Zealand Beekeeper*.

Funding for a similar survey during the coming season is included in the budget for the Phase II Varroa Management Programme. Surveillance beyond that point will depend on what arrangements are made for long-term management of varroa. Continued government funding for varroa surveillance cannot be assured. It is possible that the way the programme is delivered will need to be modified to reduce costs.

North Island Surveillance

A targeted surveillance programme has taken place in the south of the Movement Control Line.. Approximately 4000 hives have been tested and five infected apiaries detected: one on SH1 immediately south of the Movement Control Line, one on SH4 between Raetihi and Wanganui, and three in the Whanganui Valley near Jerusalem.

All of these sites are within 10km of the line and four of these five apiaries were voluntarily moved north of the line by their owners.

North Island Movement Controls

The Movement Control Line (MCL) will remain in the same position for the coming season, following a decision by the Varroa Management Group on August 23. MG considered the line was slowing the southward spread of varroa, and should be retained for the time being. New movement control conditions are being developed for north and south of the MCL. Affected beekeepers will be notified of these conditions as soon as they are finalised.

Organic acids closer to approval

Agricultural Compounds and Veterinary Medicines (ACVM) group of MAF is continuing to assess applications to register formic acid, oxalic acid and thymol for varroa control. There are some outstanding issues to be addressed with the thymol application, while formic acid and oxalic acid are progressing well.

Approval is likely to be in the form of an exemption from the requirement to be registered under the ACVM Act. Use would be subject to a code of practice, to be developed by MAF Biosecurity in consultation with ACVM and the beekeeping industry. ACVM is required to consult with affected parties before issuing an exemption.

Varroa book mailout delayed

Mailout of the Control of Varroa book has been delayed because of a printing problem. Serious flaws in the colour

Paul Bolger MAF Biosecurity

printing were identified after the initial print run had been completed. The printer (not Crown Kerr Printing) is now redoing some sections of the book.

The book should be mailed to all beekeepers by mid-September. MAF apologises to beekeepers for this delay.

Those with Internet access can view or download a PDF file of the book from the Varroa Index on the MAF Website (www.maf.govt.nz). All beekeepers are urged to read this book when they receive a copy.

Education programme begins

AgriQuality New Zealand and HortResearch have jointly been awarded a contract to deliver a varroa education programme to beekeepers. This will include:

- production of three videos on different aspects of varroa control
- establishment of a free phone system for beekeepers who have varroa-related queries
- writing of regular updates on varroa management for inclusion in this magazine and circulation to hobby beekeeping organisations
- delivery of a nation-wide series of varroa workshops..

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Letters to the Editor

Varroa spread aided

An article appeared in a recent Thursday Farmer in the *Taranaki Daily News*, giving some details on what the spread of varroa will mean to beekeepers. On the same day, I had a ring from a farmer concerned that he and others in the Okau area had been approached by a beekeeper from the Bay of Plenty, offering a "very good deal" if he could put apiaries of 40 hives on their properties!!!

This would break the regulations regarding shifting hives from the infected zone into the buffer zone and certainly hasten the spread of varroa. It is the perfect example of unscrupulous beekeepers who do not care about the industry, providing they can make a profit.

I am awaiting the identification of this beekeeper so the Taranaki club will be able to ask the Ministry of Agriculture 'and Forestry to take the necessary action.

Recently, MAF was reported saying it had no evidence of any breaches of the regulations. I find this hard to believe when there is ample anecdotal evidence by beekeepers in the King Country/Taupo/Waimarino areas that such breaches are commonplace.

One has to wonder what has happened to the prosecutions that were supposed to be laid against unregistered beekeepers found in the Waikato when the varroa was first found.

- George Jonson, Taranaki Amateur Beekeeping Club

Genetic Modification

I wish to bring to the attention of readers, that companies are now asking for beekeepers to declare their product GM free.

Currently, we can only say that we are 99% certain that our products are GM free - those in the Rotorua area where the GM Pinus Radiata trial is being held would have less certainty.

If GM crops are released for growing in New Zealand, most of us will not be able to sign GM-free documents, because of the distances that our bees fly to collect pollen and nectar. Also, we are unlikely to know where GM crops are being grown.

If you are concerned, write to Government ministers and log on to the Web site: <u>www.gefreeregister.co.nz</u>

It was set up by Chris Bone, with the aim of being able to produce maps showing areas in New Zealand where people wish to remain GM-free.

Beekeepers who were at the NBA conference in Queenstown all agreed to declare their opposition to GM. Now is the chance to register on the Web site and contact the ministers. The beekeeping industry may be able to cover the whole of New Zealand!

The five ministers who will be making their decision soon (not sure of the date) are Prime Minister Helen Clark, Minister for the Environment Marion Hobbs, Minister of Agriculture Jim Sutton, Minister of Research Science and Minister of Technology for the Crown Research Institute Pete Hodgson and Minister of Health Annette King.

Members wishing to make a stand on this issue can write to them at: House of Parliament, Wellington.

- Jane Lorimer, NBA executive member, Hamilton

Resistant Varroa

A colleague in the UK reports that they have found varroa mite that is resistant to Apistan and Bayvarol especially in the South and SW of England. These cases were found as part of the rountine monitoring carried out by the Bee Unit from the Central Science Laboratory (CSL) rather than beekeepers reporting collapsing hives despite treatment. In fact the CSL only reports one case where pyrethroid teatment appears to have broken down but accepts that there may be more cases yet to be found. The CSL says that pyrethroid treatments are working very well and in the current season CSL field officers often found it very difficult to get enough varroa mites to monitor for resistance.

You can read more about this and the testing method for resistance at http://www.csl.gov.uk/prodserv/cons/bee/

- Murray Reid National Manager Apiculture

Scientist denies media claims

Readers may have seen newspaper reports of a complaint that claims on a Web site for medicinal properties of manuka honey are not backed up by the actual research findings, and that I had checked for accuracy one of those sites and that I endorsed the use of manuka honey for stomach ulcers.

This issue has raised a lot of negative publicty for a valuable product. It may well be that there is promotional literature around that is not on the Web <u>http://honey.bio.waikato.ac.nz</u> that does the same.

Would anyone in the business of promoting honey for sale please note that neither I nor the University of Waikato Honey Research Unit have ever endorsed any product, and will not. It would seriously undermine the credibility of the group's research. It is also a very serious threat to the credibility of our research for false claims of findings to be attributed to our research. And it is a very serious slur on my standing as a scientist for it to be claimed that I have approved of what anyone is doing in the marketplace if that is in any way unsound scientifically..

Information on the output from the research I make freely available for people to use, and I am happy for my name to be used in association with any of that if it is correctly presented.

But I am not prepared to have my name or that of the Honey Research Unit used in any other way to lend authenticity to any promotion of sales.

- Dr Peter Molan, Honey Research Unit University of Waikato



MAF starts sorting compensation claims

Fifty claims for compensation were lodged by beekeepers whose hives have been infected with the varroa mite in an eight-month period from October 2000.

The claims, made under section 162A of the Biosecurity Act 1993, were submitted to the Ministry of Agriculture and Forestry. For many reasons, the task of processing and determining claims has proven to be very complex and timeconsuming. However, despite this, good progress has been made.

By September 1, 2001, MAF had made a determination for 83% of the claims. Determinations for the remaining 17% will depend on the outcome of investigations by the MAF enforcement unit and/or claimants or specialist advisers responding to MAF requests for additional information.

The following outline illustrates the progress made.

- 25% of claimants have accepted as full and final a MAF compensation offer.
- 25% of claimants have accepted in part and/or continue to correspond about a MAF compensation offer.
- 33% of claims have been declined on the grounds that criteria in section 162A of the Biosecurity Act have not been met. Around 25% of the claims declined are subject to further assessment to determine whether an ex gratia offer is appropriate.
- 8% of claimants have been advised that MAF is awaiting the outcome of an investigation into whether section 162A(4) of the Act prevents them from receiving compensation. That section particularly applies when a person has committed a serious or significant breach of the Biosecurity Act or regulations made under the Act.
- 9% of claims have not been able to be determined, as MAF awaits a response to requests for additional information or input from specialist advisers.

- By Henry Dowler

National adviser policy co-ordination MAF Biosecurity



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Varroa workshops to begin

More than 50 MAF-funded workshops entitled 'Living with Varroa' will be run throughout New Zealand over the next year. Intended to help beekeepers develop the skills they need to successfully manage varroa, they will be in three forms:

- · Two days for North Island commercial beekeepers
- · One day for South Island commercial beekeepers
- · Three to four hours for hobby beekeepers.

All beekeepers, partners and employees can attend, but commercial workshops are limited to 25 participants on a firstcome-first-served basis. To be eligible to attend, beekeepers must return a registration form.

Hobby beekeepers do not need to formally register because no size limit has been set on their workshops.

Time and place

A timetable of the workshop in your area has been sent to all registered beekeepers. Venue details are still being finalised, but will be sent to beekeepers who return their registration forms for a nominated workshop.

Costs?

The workshops are free and morning and afternoon tea and lunch will be supplied for the commercial one and two-day workshops. Transport, accommodation and any other meals are the attendees' responsibility.

Course outline

Workshops will cover information in the book *Control of* Varroa – A Guide for New Zealand Beekeepers, including:

- · Varroa biology and its effects
- Varroa population growth and development
- Detecting varroa and interpreting results
- Control methods using chemicals as well as biotechnical (management) methods
- Chemical resistance, residues and safety issues with the chemicals
- · Integrated pest management and timing of varroa controls
- Research work and breeding or selecting for resistance.
- · Other exotic pests and diseases
- Regulatory and legal issues relating to movement of hives and bee products and use of chemicals.

As well as course notes, promotional material and contact lists, there will be discussion and demonstrations including testing for varroa, evaluating infestation levels and treating hives.

The two-day workshops will include hands-on exercises using registered or soon-to-be-approved chemical treatments.

Facilitators

Dr Mark Goodwin and his team from HortResearch at Ruakura prepared the course material. They will lead the first few workshops in Hamilton and Auckland, and the first South Island workshops. After that, workshops will be run by staff from AgriQuality New Zealand, Telford Rural Polytechnic and HortResearch.

Varroa workshops . . .

How to reserve a place

Hobby beekeepers do not need to reserve a place.

Commercial beekeepers must complete the reservation form (mailed to those living north of the Movement Control Line) as soon as possible and send it to AgriQuality in Hamilton: Margaret Morris AgriQuality NZ Ltd Private Bag 3080 Hamilton Ph: (07) 838 5851 or 0800 424 490 Fax: (07) 838 5846

Email: morrism@agriquality.co.nz

Commercial beekeepers: if you have not sent in your application form and received an acknowledgement, you may not be accepted at the workshop.

For further information, please phone: North Island:

- Bryan Mitchell, 021 735 937
- Murray Reid, 021 972 858

South Island:

David McMillan, 021 951 625

Custom-made hive winch

By Frank Lindsay

As more beekeepers move their hives around we have to work smarter. A lifting appliance to preserve your back makes sense.



Alf Ashley from Makahu, east of Stratford, has retired from beekeeping now, but he used to move 132 hives from the mountain to the backcountry to gather honey crops. To make the task easier, he and an engineer designed a hoist to fit on the toe ball of a utility vehicle.



Easily removed from the vehicle when not in use, the lifting power is provided by a 12-volt boat winch, bolted on to a four-wheeled dolly widened to fit the 65mm square, 2.8m-long beam. The dolly has a static bolt on one side and a threaded lever opposite, providing a locking mechanism so the winch can be held in any position along the beam.

The front end of the beam has a removable stop bolt and a "D" ring,

securing the beam when not in use. Power is provided via a three-pin connection to the battery and the button hand control, hanging from the winch, is within easy reach.

The upright was made from a 60mm diameter tube. It stands 1.25m off the deck and fits snugly into a 55mm diameter toeball mount extension welded to a 300mm long piece of solid steel fitted snugly into the upright pipe. That provides strength and rigidity to the upright steel tub. The top beam is fitted into the upright tube via a top link pin and linch pin. To give additional bracing, the whole upright structure fits into a circular fitting bolted to the back deck support.

Hives can be moved on a cradle but Alf found it quicker and



easier to use a short length of nylon rope to lift the hives once they had been securely strapped.

The boom can be lowered or raised by adjusting the bracing chain to suit uneven ground or to accommodate four-super high hives.





From Scotland's Orkney Islands to Telford and back

By Erland Omand

Twenty thousand kilometres to study bees!

Where in the English speaking world can you study beekeeping on a full time basis? Well Telford Rural Polytechnic, New Zealand would appear to be, if not the only place, certainly one of the very few which provide this opportunity.

Since my early school days I have been looking to gain a qualification in beekeeping and since then I have sporadically contacted organisations such as the British Beekeeping Association, IBRA (International Bee Research Association) and agricultural learning institutions to find out the possibilities of studying beekeeping. But none of those bodies could help. It wasn't until I was in my 30s with a little more determination and access to the Internet that I found what I was looking for. A full time course that provided all the basics and grounding needed for commercial beekeeping. It was a mere 20,000km away, on the other side of the world in New Zealand.

So I went to Telford to study for the Advanced Certificate in Apiculture and the Queen Bee Rearing Certificate. My year began on August 3, 2000, arriving from a hot Scottish summer (yes we do get them) to a cold New Zealand winter. It took me a few days to get over the jet lag and to adjust as a 34 year old living with 16 and 17 year olds, but adjust I did.

I started the apiculture certificate in its third term on August 7 which, being winter, was the lecture term.

The certificate is a comprehensive, four-term course consisting of 15 modules, an examination, a major project, a plant collection, 25 practical competencies, and 20 days work experience. It is also flexible so students can start at the beginning of any of the four terms, which suited me.

The 15 modules range from the history of beekeeping and budgeting to disease and pests of the honeybee and hive products. The major project is an individual student choice that relates to either rethinking and marketing a hive product or designing and building a device that assists beekeeping or hive manipulation. The plant collection is a minimum of 40 nectar and pollen-bearing plants suitable for the honeybee. The plants have to be collected, dried, identified, categorised and mounted.

The 25 practical assessments to be achieved range from basic hive manipulations to grafting and cell raising. The work experience consists of 20 days with two to three commercial beekeepers, to provide hands-on experience and expose students to a range of techniques and practices in beekeeping.

The Queen Bee Rearing Certificate is a certificate I did in addition to the Advanced Certificate in Apiculture. It is designed to teach in more detail and depth the knowledge and skill required for successful queen rearing. It consists of four theory modules, an examination, 23 practical competencies and four to six weeks' residential training at Telford.

My year at Telford passed quickly. I arrived thinking I knew a reasonable amount about beekeeping and the course at Telford would just fill in the gaps, but I soon realised how little I really did know and I was on a steep learning curve from the day I started.

The combination of theory and practical work was invaluable, leaving me with a good grounding in beekeeping and feeling confident in my abilities. Looking at my experiences over the past year, it would be very difficult to single out any one particular aspect of the course that I have enjoyed the most. However, there is one part that has given me both the most enjoyment and the most frustration and that has been my major project. In my naivety and enthusiasm after doing the Certificate in Queen Bee Rearing, I chose as my major project to start Telford's first breeding programme through the artificial insemination of queen bees.

I have learnt such a lot from that, in both the practical skills and theoretical knowledge required in artificial insemination and from my many mistakes! I am very thankful to Telford for the opportunity to be able to learn and acquire this specialised skill and knowledge and I hope that my few remaining AI queens will help in some small way to improve Telford's stock.

Another part of the course that I feel was invaluable was the work experience. This gave me the opportunity to meet a range of beekeepers and exposed me to a wealth of knowledge, experience and ideas that would have taken me years to learn.

 I would like to take this opportunity to thank the following; Tony Scott, Scott Apiaries, Hanmer; Nick McKenzie, Balclutha; Frank and Mary-Anne Lindsay, Lindsay Apiaries, Wellington; Blair and John Dale, Strathdale Apiaries, Middlemarch and Peter Sales, Port Chalmers.

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Meets the last Tuesday of every month. February to October. Field Day November. Contact: Trevor Corbett Phone: (03) 314-6836

CHRISTCHURCH HOBBYIST CLUB

Meets on the first Saturday each month, August to May, except in January for which it is the second Saturday. The site is at 681 Cashmere Road, Commencing at 1.30pm. Contact: Fiona Belleht "Oakwood" Bradley Road, RD 5 Christchurch. Phone: (03) 347 9919 NELSON BRANCH Phone: Michael (03) 528-6010 NELSON BEEKEEPERS CLUB Contact: Kevin Phone: (03) 545-0122

Phone: (06) 368-1277

OTAGO BRANCH Phone: Mike (03) 448-7811

POVERTY BAY BRANCH Contact: Barry (06) 867-4591 BEEKEEPERS CLUB Meet 3rd Sunday each month (except January) at Kites Woolstore, Norfolk Road, Masterton at 1.30pm. Convenor: Arnold Esler. Phone: (06) 379-8648

WELLINGTON BEEKEEPERS ASSOCIATION

Meets every second Monday of the month (except January) in Johnsonville. All welcome. Contact: John Burnet, 21 Kiwi Cres, Tawa, Wellington 6006. Phone: (04) 232-7863 Email: johnburnett@xtra.co.nz