T. Roberts

NO. 9 MARCH 1988

NORTHLAND BEEKEEPING

Derek Bettesworth
Apicultural
Advisory Officer

MAFQUAL NORTH

MINISTRY OF AGRICULTURE
AND FISHERIES

P O Box 943
WHANGAREI
ph. 487179

CONTENTS

Acknowledgements

* by Murray Reid from Waikato Bee Notes, December 87

\# by Andrew Matheson from Beelines, November 87

****

****

WORLD BEEKEEPING SCENE

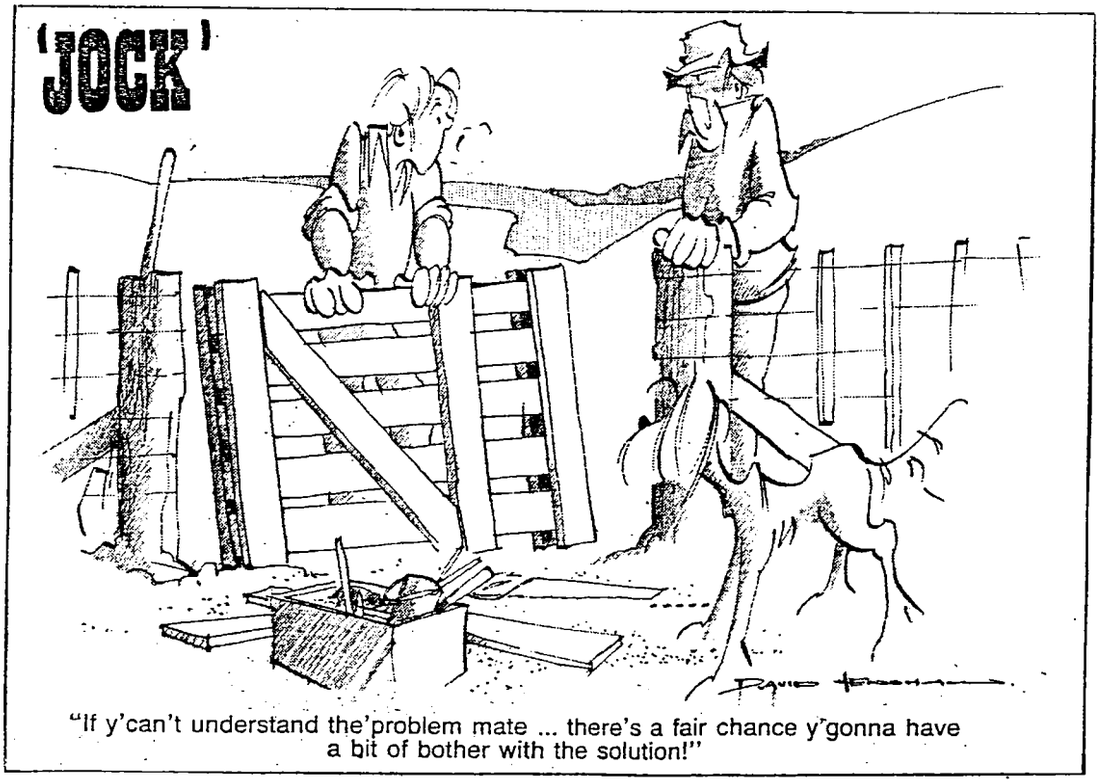
Honey prices remain depressed as the surplus created by the US Honey Loan Scheme continues to come on to the market.The effects of this are being felt directly by NZ beekeepers, especially by those producing bulk light coloured honey for export.

Be thankful you are not keeping bees in North America.Tracheal mite is spreading and is proving to be much more damaging, especially to overwintering hives, than many first anticipated. Varroa mite is widespread.This is a slow acting parasite, inevitably fatal in temperate climates if not treated. Naturally a massive effort is being made to find control methods, with several promising chemicals already identified. It will be several months at least before any of these are approved for use. North American beekeepers already routinely use antibiotics to control American and European foulbrood and will soon be using more chemicals to control mites. All this adds extra cost to beekeeping, risks chemical residues in honey, and spoils the image of honey as a natural healthy product.

As if this were not enough the Africanised bee is steadily working through Mexico and will be in Texas this year or next.

Canada has closed its border to bee imports from the US to try and keep the mites out as long as possible.Both species of mite have already been accidentally introduced into Canada but were detected and supposedly eradicated.

NZ and Australia are now the only source of bees for Canada. Big numbers of queens and package bees will be leaving NZ this season for Canada.The size of the market will be a lot smaller than it might have been,because of the depressed economic state of Canadian beekeeping caused by low honey prices.



"If y'can't understand the'problem mate ... there's a fair chance y'gonna have a bit of bother with the solution!"

DISEASE CONTROL FEE

We've been debating how MAF can recover these costs from the industry for nearly 4 years, and we've had an application to levy a registration fee turned down under the present Apiaries Act. Are we any closer to resolving the issues? Your guess is probably as good as mine. Here is the situation and the main issues that can only be resolved by compromise :

* MAF needs to recover $104,800 to maintain the 8 apiary registers which form our database of over 35,000 names and addresses.

* We need to recover $100,073 to pay for our field inspection work. This only allows for a national average inspection level of 10% of apiaries and won't pay the majority of the beekeepers who act as part-time inspectors. In other words beekeepers willnot be a "direct user pay" but will rather be buying an insurance programme.

* The hobbyist beekeepers have said they shouldn't be levied the same per beekeeper fee as a commercial beekeeper with hundreds of hives. A per beekeeper fee of $30 would meet our needs and be "relatively easy" to follow up with respect to bad debts.

* The commercial sector is saying all beekeepers should contribute. It costs nearly as much to register all the hobbyists with a few apiaries each as it does to register a few commercial beekeepers with many apiaries. And both groups contributeto the spread of AFB.

* The MAF's problem is one of cost of administration and debt servicing. It will be expensive to issue invoices for over 7000 hobbyists and chase bad debts. Some MAF managers have suggested a minimum fee should be $25 - $40 to allow for this. The MAF costs of $204,873 do not include the admin. costs of invoicing.

* A sliding scale of fees or a fixed fee plus a sliding scale based on hive numbers, is fair to all beekeepers but presents a legal nightmare when it comes to debt servicing. We can't write to beekeepers saying you owe MAF X dollars, pay up or else, because we don't know what they owe us; it depends on how many hives they say they have. Your executive has this problem now with the hive levy.

* MAF has said - if no beekeeper moneys are available by next inspection season then no apiary inspection will be carried out.

* Changes to the Apiaries Act and maybe the Hive Levy Act will be required. Our Under Secretary has said he'll help put the relevant Bills through, and expects them to go through quickly provided they are not controversial.

If beekeepers make this issue any more controversial than it has already been we'll get bogged down in the legal jungle and you are the only ones who will lose out. Your Auckland colleagues are feeling the heat at the moment.

OK, so where are we at now? Well, the latest round of discussion between MAF, the Executive and Maxwell, the Under Secretary for Agriculture, didn't resolve anything. However, we're trying to work out some figures and compromise around the following scenarios :

a. All beekeepers will pay a set fee
b. The hobbyists will pay half that of the 50+ hive group
c. The 50+ group will pay an additional fee per 100 hives
d. There will be a penalty for late payment
e. The cost of recovering the debt will be added to the fee and can be collected in a court of law. Extra measures, such as depopulation or destruction or confiscation of the hive(s) etc are also being considered.
f. Registreation stickers may be issued on an annual basis and one must be in every apiary as proof of current registration, eg your car licence sticker.

* MAF may have to absorb some of the extra costs of invoicing 7000 hobbyists for $20, or an even lower figure, if the government agrees to pay some of the registration fee.

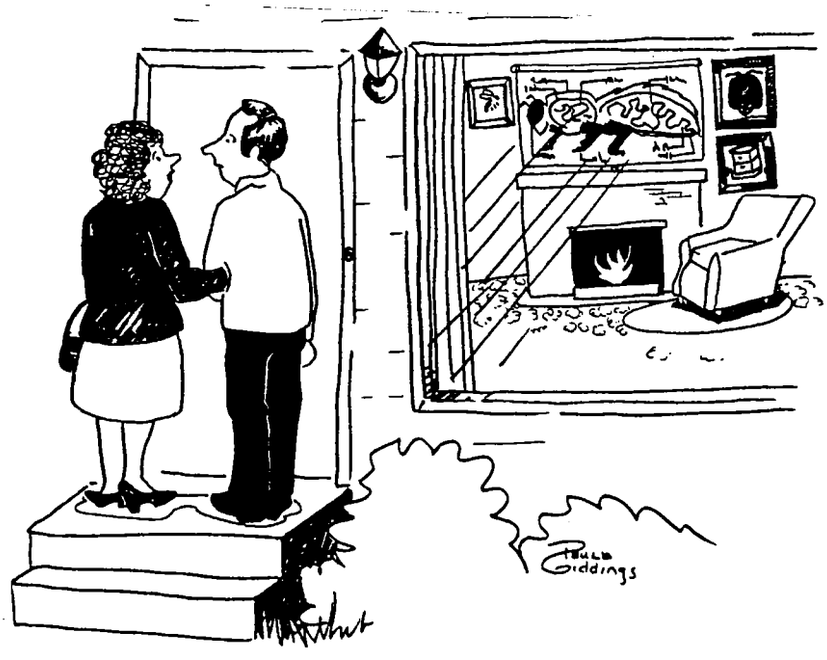
* The industry will have to accept an increased number of beekeepers failing to register hives or apiaries.

As Mrs Thatcher said recently "I am extraordinarily patient, provided I can get my own way in the end".

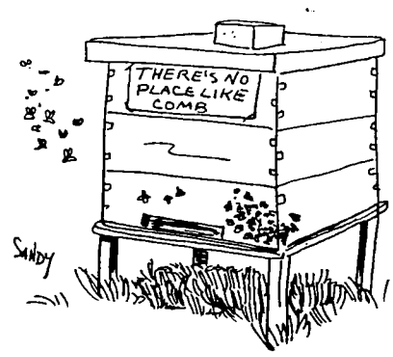
We do not have the luxury of any more "time", and we don't expect to please

everyone with whatever solution is decided upon. Let me say, that commercial beekeepers at least in my patch have offered resigned acceptance or open encouragement on this cost recovery issue and I really appreciate that. Your president is probably the only beekeeper who knows just how much talking writing, pleading, arranging, arguing etc I've put into this debate, and we're not finished yet!

* * * * * * *



Whatever you do, don't ask him about his bees!



PROTECTING HIVES FROM WASPS

Wasps haven't been much of a problem in Northland so far this season,probably because the cold wet spring killed off many queens before they could establish nests.However I am sure at least some areas will soon be plagued again.

There are five ways to deal with a wasp problem :

1 GOOD MANAGEMENT

As with all beekeeping problems, the best way to avoid them is to make sure they never start by always using good management practices.Strong disease free hives are far better able to protect themselves from wasp attack than weak colonies.The way to have strong colonies is always have a good young queen (less than two years old), and adequate honey stores in each hive.These are the basics of good beekeeping, but how often ignored? Also important is good woodware without holes, avoidance of robbing and warm dry apiary sites.

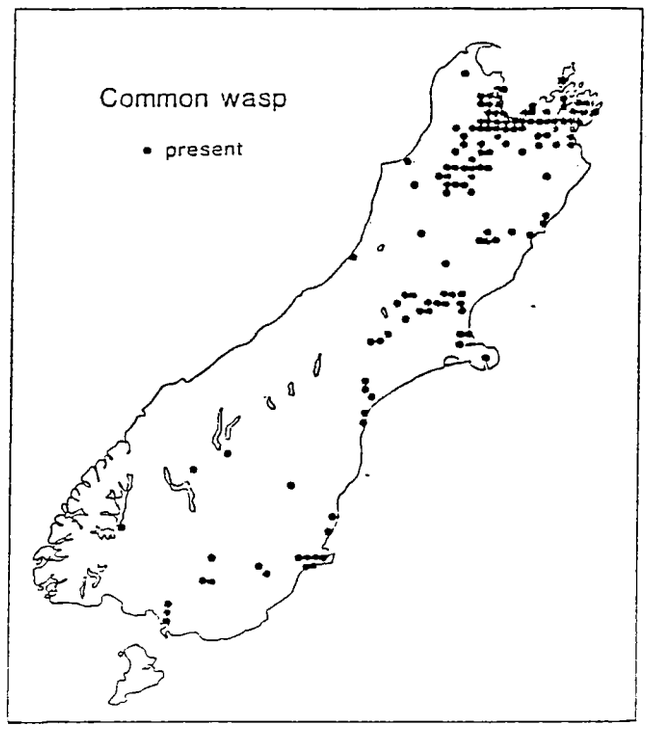
2 LOCATE WASP NESTS AND DESTROY THEM

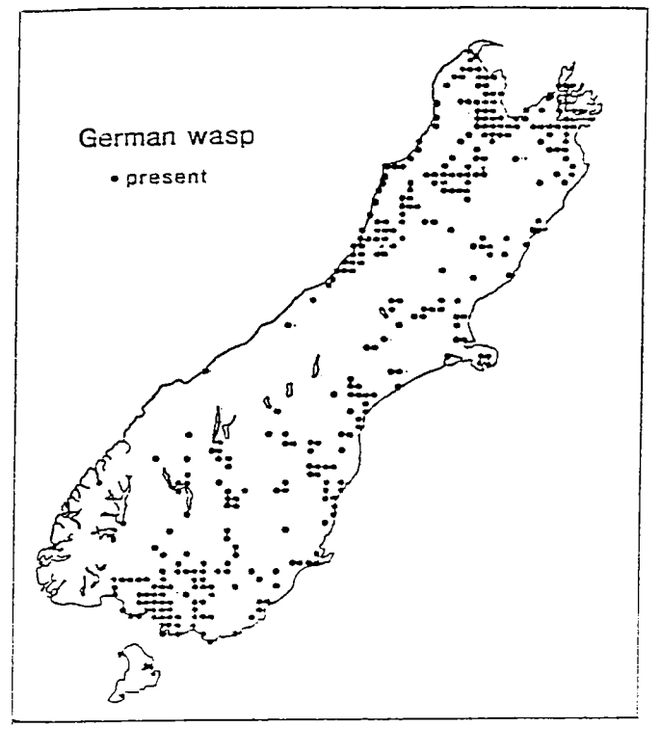
Wasps don't forage much further than 300m from their nests so in some situations it is possible to solve your problem this way. The best way to find nests is to follow wasps in the early morning or evening when the sun is low in the sky. Flying insects are easier to see at a distance then.

Don't attempt gimmicks like tieing pieces of cotton to wasps or dusting them with icing sugar ,these are good ways to get stung, not find nests!

After you have found a nest the next problem is how to deal with it. Small nests in the ground can be destroyed by pouring a bottle of petrol into the entrance.It is not usually necessary to block the entrance as well, although it probably helps.Petrol fumes kill the wasps. Lighting the nest to explode it is satisfying, spectacular and dangerous;not recommended. Vapona pest strips can be cut to fit into the entrance hole and work well in enclosed nests as they give off toxic fumes.

Nests in the open,or large nests with many openings need to be treated with insecticide.Any brand of powdered insect killer with carbaryl as one of the ingredients will do.These are available from your local garden shop. Take a length of hose 2 to 3m long. Fill one end with a couple of spoons full of insecticide. Walk quietly up to the nest keeping out of the wasps flight path. Gently insert the end of the hose in an entrance and blow hard (don't suck!).Incoming wasps will carry the poison through the nest.Be sensible about where you store insecticide (not with your





Areas in the South Island where common wasps and German wasps were collected.

There are three different types of wasps in each species: workers (sterile females), drones (males) and queens (fertile females). Wasp colonies usually last one summer, and queens and drones are produced at the end of the colony's life in autumn. They survive during the winter to start a new colony the next spring.

There were no worker common wasps in the samples from mid July on, which showed that common wasp nests were dying by early winter. German wasp workers were caught throughout the year, which showed that some German wasp nests must have survived through winter. Queens of both species appeared earlier in the south of New Zealand than in the warmer north.

FUTURE WORK

DSIR Ecology Division has been delighted by the enthusiastic response from the general public. This has given us a head start in studying the ecology of wasps, a subject which is important because of the huge potential impact that the wasps could have on our native insects and birds. Further samples from around New Zealand would be very welcome because they would help fill in the gaps in our knowledge of the distribution of the wasps, and would also allow us to measure the rate of spread of the two newest arrivals (common wasps and Asian paper wasps). Results from further years will also allow us to check whether the relative abundance of the species we found in our first year's survey is typical of those to be expected in future years. Please send dead wasps in a container such as a matchbox, or a film canister, to Wasps, DSIR Ecology Division, Private Bag, Nelson. Include your name and address, a description of where you caught the wasps, the dates on which they were caught, and whether the wasps were caught in an urban, rural or bush habitat.

FURTHER INFORMATION

"WASPS", Ecology Notes 3, describes German and common wasps, and how to get rid of wasp nests.

"WHAT WASP IS THAT?", Ecology Notes 4, looks at different kinds of wasps in New Zealand.

"PAPER WASPS", Ecology Notes 7, describes paper wasps and where they were found in the wasp survey.

Written by Henrik Moller and Alison Ballance 1987.

Produced by Ecology Division, DSIR, Private Bag, Lower Hutt.

Ecology Notes 6

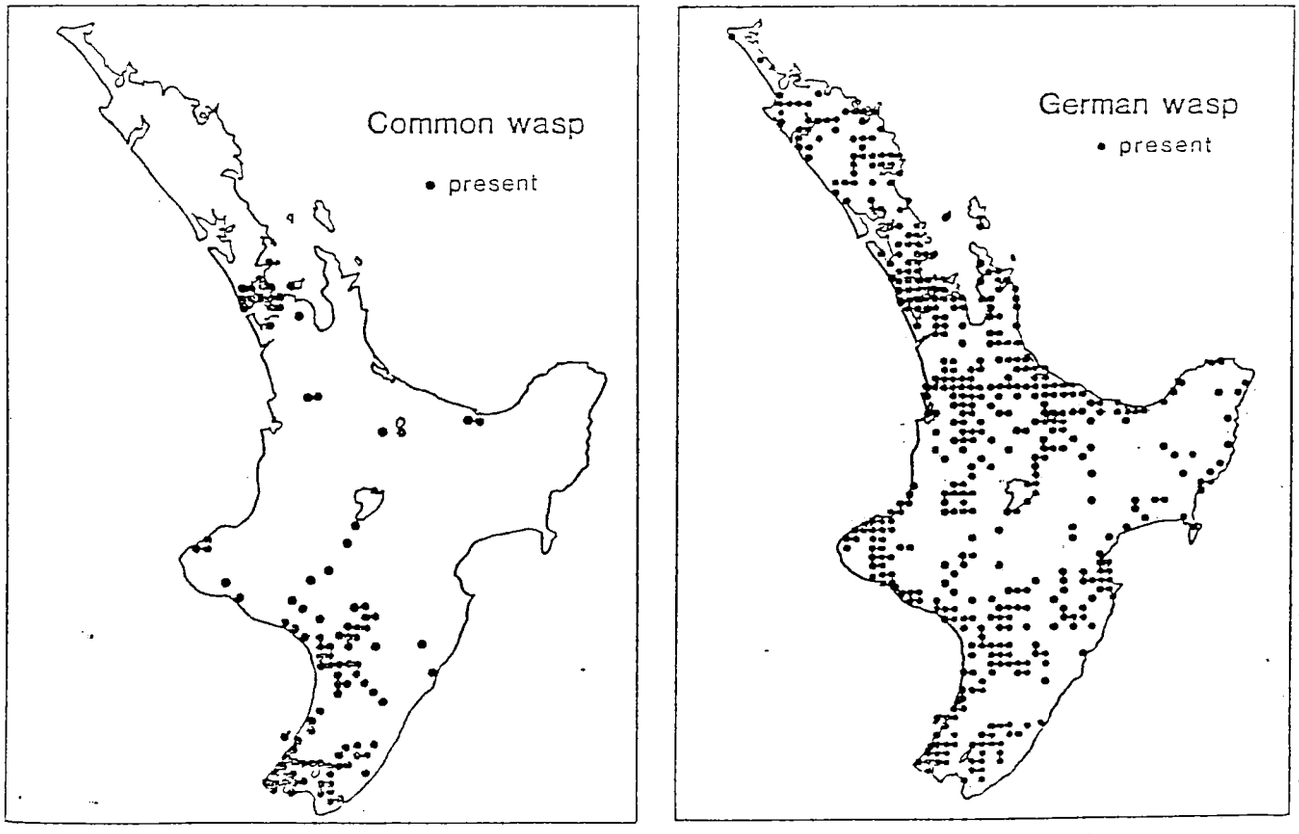
ECOLOGY DIVISION, DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH ISSN 0113-1907

The 1987 Wasp Survey

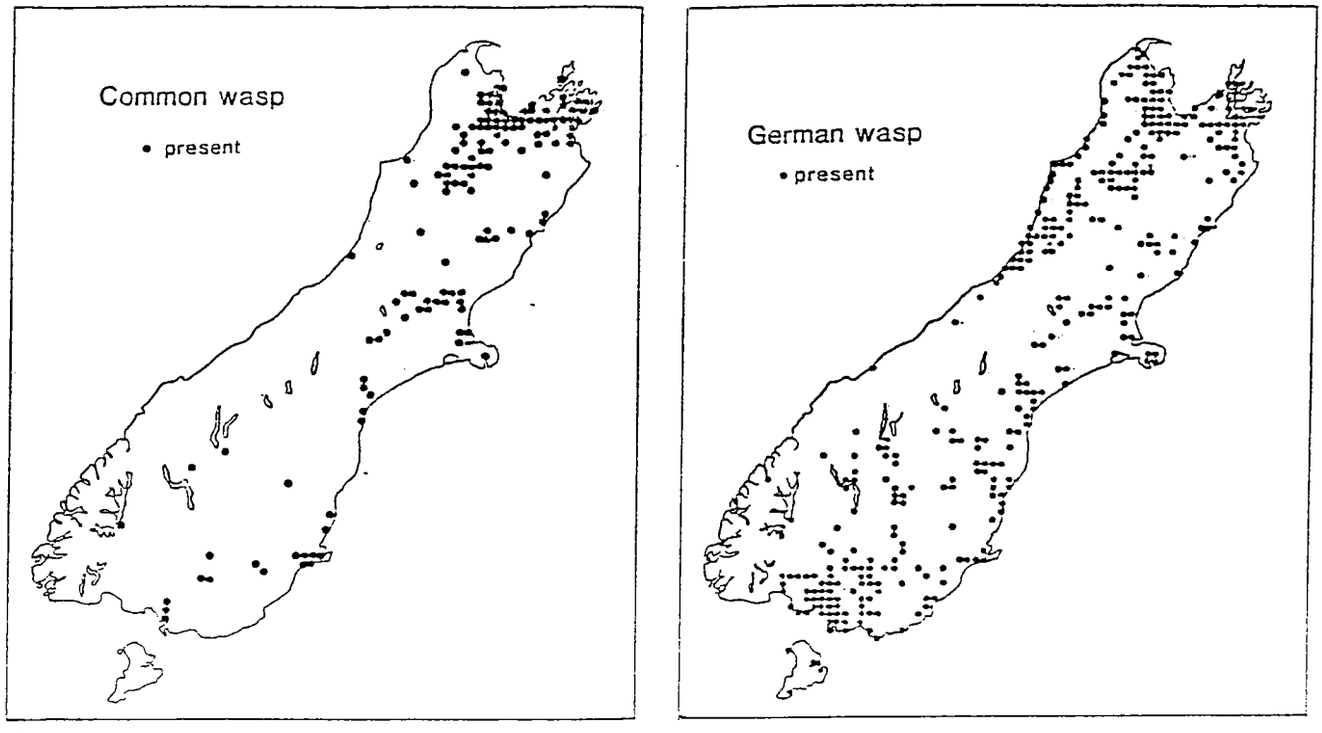
Between March and September 1987 over 3200 New Zealanders took part in DSIR Ecology Division's wasp survey. Samples of wasps were sent to DSIR in Nelson with letters describing the place and time that they had been caught, and the scientists there sorted and counted the samples.

The survey showed that German wasps *(Vespula germanica)* are still the most abundant of the social wasps in New Zealand - they were found from North Cape to southern Stewart Island. Common wasps *(Vespula vulgaris)* were found mainly in the bottom half of the North Island and the top two-thirds of the South Island. There were often isolated pockets of common wasps in cities and towns (such as Hamilton, Whakatane, and Gore) - these are likely to be centres from which common wasps will spread out in the future. German wasps do not seem to have been pushed out of any areas by the arrival of common wasps, so the two species are likely to co-exist in New Zealand for years to come.

In areas infested by both species, common wasps were more numerous than German wasps in forests and in towns, but not in rural habitats. Common wasps may be more successful in towns because they are less fussy about where they build their nests, which have been discovered in attics, holes in walls and even in the back of an old chair! As well, they may "hitch-hike" with people and freight from one town to another, so that as they spread they are found first in towns.



Areas in the North Island where common wasps and German wasps were collected.



Areas in the South Island where common wasps and German wasps were collected.

There are three different types of wasps in each species: workers (sterile females), drones (males) and queens (fertile females). Wasp colonies usually last one summer, and queens and drones are produced at the end of the colony's life in autumn. They survive during the winter to start a new colony the next spring.

There were no worker common wasps in the samples from mid July on, which showed that common wasp nests were dying by early winter. German wasp workers were caught throughout the year, which showed that some German wasp nests must have survived through winter. Queens of both species appeared earlier in the south of New Zealand than in the warmer north.

FUTURE WORK

DSIR Ecology Division has been delighted by the enthusiastic response from the general public. This has given us a head start in studying the ecology of wasps, a subject which is important because of the huge potential impact that the wasps could have on our native insects and birds. Further samples from around New Zealand would be very welcome because they would help fill in the gaps in our knowledge of the distribution of the wasps, and would also allow us to measure the rate of spread of the two newest arrivals (common wasps and Asian paper wasps). Results from further years will also allow us to check whether the relative abundance of the species we found in our first year's survey is typical of those to be expected in future years. Please send dead wasps in a container such as a matchbox, or a film canister, to Wasps, DSIR Ecology Division, Private Bag, Nelson. Include your name and address, a description of where you caught the wasps, the dates on which they were caught, and whether the wasps were caught in an urban, rural or bush habitat.

FURTHER INFORMATION

"WASPS", Ecology Notes 3, describes German and common wasps, and how to get rid of wasp nests.

"WHAT WASP IS THAT?", Ecology Notes 4, looks at different kinds of wasps in New Zealand.

"PAPER WASPS", Ecology Notes 7, describes paper wasps and where they were found in the wasp survey.

Written by Henrik Moller and Alison Ballance 1987.

Produced by Ecology Division, DSIR, Private Bag, Lower Hutt.

Ecology Notes 7

ECOLOGY DIVISION, DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH ISSN 0113-1907

Paper Wasps

ASIAN PAPER WASPS

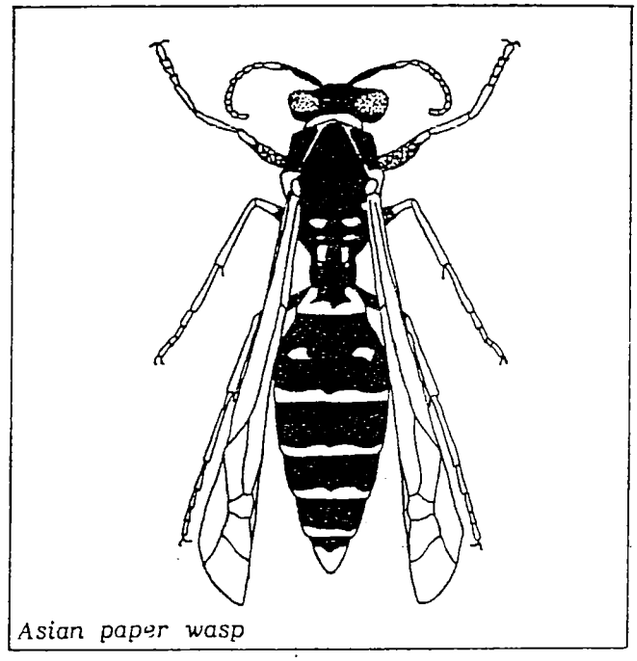
Asian paper wasps *(Polistes chinensis)* were first found in 1979 on the Whangaparoa Peninsula (North Auckland) and in the eastern suburbs of Auckland. The Ministry of Agriculture and Fisheries tried to eradicate the wasp but failed, because it was already too abundant. It had probably arrived in New Zealand a year or two before as a stowaway in goods from Japan or elsewhere in Asia.

Samples sent to DSIR Ecology Division during a survey in 1987 show that the Asian paper wasp has spread throughout Auckland. It has colonised as far north as Dargaville and Whangarei, and south in the fruit-growing areas of Whakatane and Tauranga. Isolated samples also came from Napier and Taumarunui.

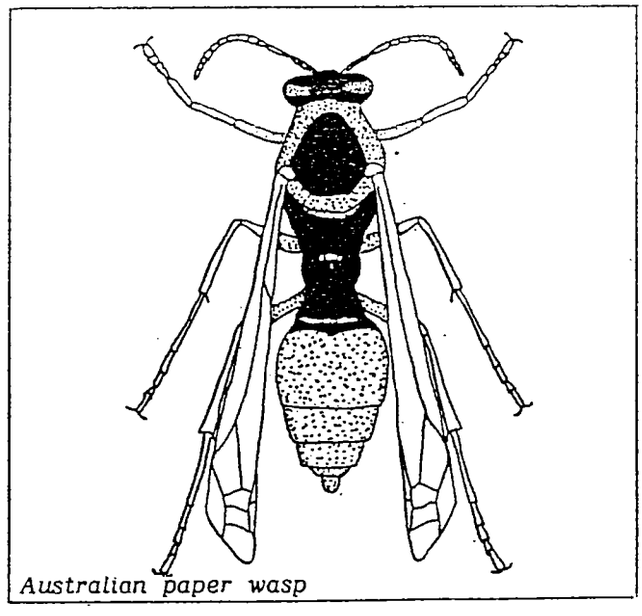
Letters from the people who sent in the samples of Asian paper wasps reported them feeding on insects (often caterpillars of Monarch butterflies), and on fruit, especially apples, guavas and grapes. We do not yet know if wasps damage healthy fruit or whether they simply feed on over-ripe or damaged fruit.

Most of the Asian paper wasps were caught in urban or rural areas, so we need to find out if they will also live in forests, where they could be a threat to native insects and birds.

Asian paper wasps are yellow and black, and the males are smaller and more yellow than the females. Paper wasps are smaller than the widespread common wasps and German wasps.



Asian paper wasp

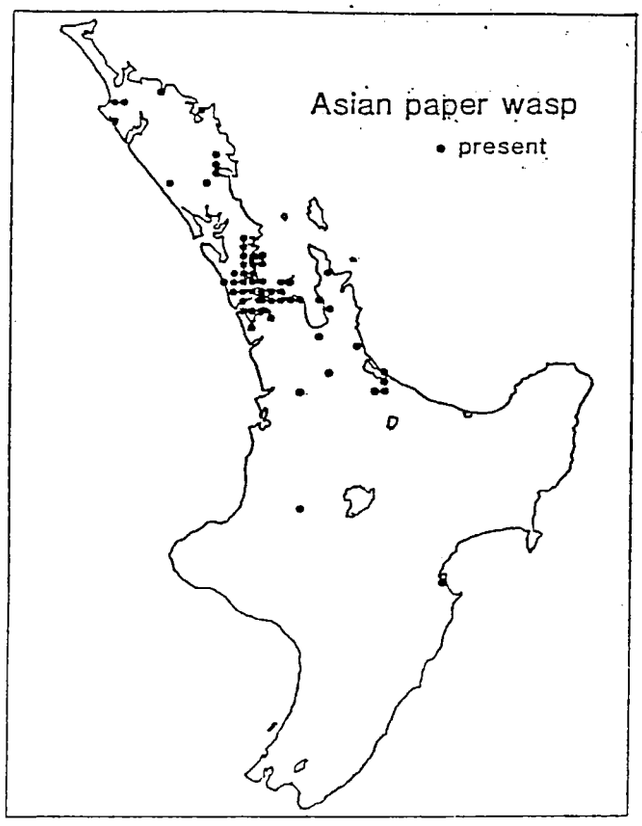


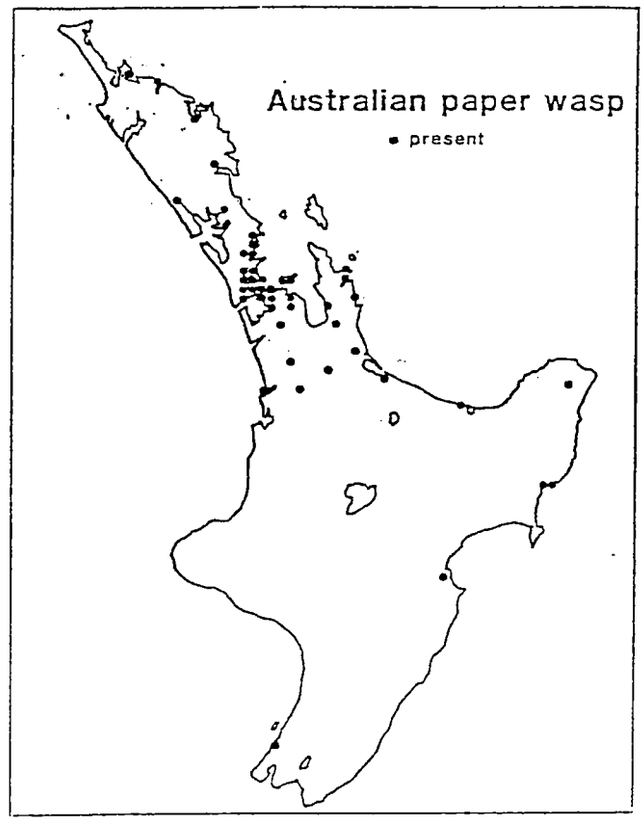
Australian paper wasp

AUSTRALIAN PAPER WASPS

The Australian paper wasp *(Polistes humilis)* is sometimes also called the Tasmanian paper wasp. It was the first wasp to be introduced to New Zealand, and was abundant in Northland in the 1880s. It probably reached New Zealand by stowing away on boats trading across the Tasman Sea.

In the 1987 wasp survey Australian paper wasps were collected commonly from Northland and Auckland, and they were recorded from as far south as Raumati, on the Kapiti Coast near





Areas where samples of Asian paper wasps and Australian paper wasps were collected

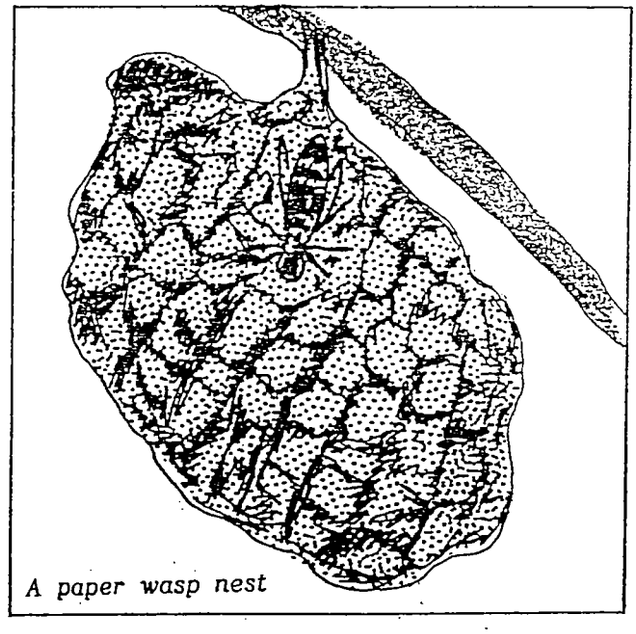
Wellington.

Australian paper wasps are reddish-brown in colour, and are smaller than the Asian paper wasp.

PAPER WASP NESTS

Both species of paper wasps make a small honeycomb nest which is no larger than a pear, and does not have an outer covering. The upper surface of the papier-mache-like material of the nest is covered with a shiny secretion that acts as water-proofing. The nests hang from small shrubs and trees, stalks of vegetation, fences and walls, and often under the eaves of houses.

Paper wasps have an unpleasant sting, but they do not seem to be any more or less aggressive than the more widespread German wasps and common wasps. If the nest is bumped they may attack, but otherwise they will keep to themselves if they are not approached closely. Paper wasps are less active in cool temperatures, so some people destroy them by approaching the nest at dusk, gently manoeuvering a plastic bag over it and then clipping it off into the bag. Fly spray will kill the wasps.



A paper wasp nest

FURTHER INFORMATION

"WHAT WASP IS THAT?", Ecology Notes 4 looks at different kinds of wasps in New Zealand.

Written by Henrik Moller and Alison Ballance 1987.
Produced by Ecology Division, DSIR, Private Bag, Lower Hutt.

HOW CHALKBROOD SPREADS

Chalkbrood spores can be spread through pollen in the field and through contaminated water sources. This means of dispersal has long been suspected by beekeepers and scientists alike, but has only just been verified by experiments.

The trial, by USDA researchers in Wisconsin, showed that CB spores can be spread in pollen loads on bees and contaminated water sources. These methods of transmission are in addition to the more significant means such as by swapping brood or bees between colonies, drifting, on queens and by feeding contaminated pollen.

In the experiment 42 colonies were set up in spring using packages from a chalkbrood-free outfit, sterilized equipment and foundation. Some adult bees were tested for CB spores, but none were found. This test confirmed that the original bees were chalkbrood-free.

However, chalkbrood fairly soon appeared, and by mid-season infection levels were higher than had been seen in other colonies in previous years. CB spores were found on the body surfaces of returning foragers, in incoming pollen loads and in a water source located in the apiary (a plastic-lined pond filled from a roof downpipe).

Finding CB spores in pollen loads doesn't prove that bees have collected diseased pollen. They do, after all, regurgitate honey to moisten the pollen, which might contaminate the load with spores. This experiment, however, is the first record of spores actually being taken from the bodies of foragers, though the possibility has often been suggested. This experiment is also the first record of CB spores being found in a water source.

The results suggest that CB can be transmitted in the field, on flowers and in waterholes that are visited by other bees. Drifting bees can carry spores from hive to hive. These experiments show the reasons for what beekeepers have already seen - that chalkbrood can spread very easily between apiaries.

This research was reported by J Koenig and others in the August 1987 American Bee Journal.

* * * * * * * * * *

HOW MUCH CHALKBROOD?

Another interesting finding of the research I reported in the previous article was about the level of chalkbrood. We hear all sorts of infection levels quoted, but actual measurements show these are usually overestimates.

In these experiments the colonies had dead-bee traps fitted, to collect CB mummies. Every two weeks the mummies were counted and the brood area measured. In this way the number of mummies can be expressed as a percentage of total brood reared.

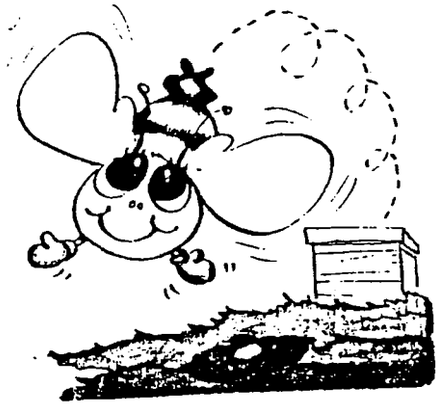
The infection levels ranged from 2.5% to 11.8% (average 4.8%). Remember the scientists described this as higher than usual, so it's clear that the measured incidence of CB is lower than it appears to the eye. Cliff Van Eaton's survey in Northland bears this out too.

* * * * * * * * * *

... AND HOW CHALKBROOD INFECTS LARVAE

How does the chalkbrood fungus survive in the hive, and what prompts it to infect honey bee larvae? Martha Gilliam of the USDA in Arizona has recently finished some experiments which give us some answers to this question.

In the experiment the bees and brood in colonies were sprayed with chalkbrood spores mixed in sugar syrup, three times per week for four months. Mummies were collected in dead-bee traps and counted, and spore levels in the colonies were checked regularly.



Despite the fact that colonies were reinoculated with the chalkbrood fungus three times a week, there were only two major periods of infection. The first was a week after inoculation began, and the other was during a period of nutritional stress in November.

After inoculation with fungus ceased, it took four months before the hives were free of chalkbrood spores. Despite this no infection was apparent.

What does this experiment tell us?

* Chalkbrood is an opportunistic pathogen, that kills individual larvae only when they are subject to other stresses.

* There is great variation between colonies in susceptibility to chalkbrood. This opens the possibility of breeding for low susceptibility ("resistance").

* We don't know much about what stresses do trigger chalkbrood. Tucson Arizona, where the experiments were done, is dry (250 mm of rain per year) and warm (in November, when infection was apparent, the average minimum temperature was 4°C, and average maximum 26°C. There was no rain). In Tucson, heat and lack of rainfall may be more important as stresses than the high humidity and low temperatures which are usually blamed.

This work was described in a 1986 issue of the international bee science magazine Apidologie.

"Let's see, if I were a queen bee, you'd be a drone. Come to think of it, you are anyway."

NOW - VITAMINS FOR BEES

Vitamin C is credited with curing almost anything, from common cold to cancer. But what about bees - does vitamin C do anything for them?

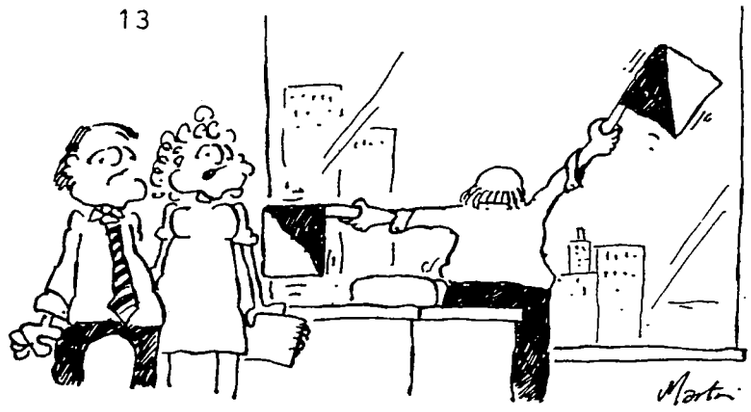
Recent research in the US suggests that vitamin C will increase brood rearing, at least in caged honey bees. Over the course of a season, bee-collected pollen was analysed for vitamin C content. The levels were highly variable, and ranged from 136 ppm (parts per million) to 1,943 ppm.

Pollen of different vitamin levels was fed to caged honey bees. Those fed pollen containing 1,000 or 2,000 ppm vitamin C reared significantly more brood than those on a 500 ppm diet.

Does this mean it's worth adding vitamin C to pollen patties? Well, we don't really know until the experiments are repeated with free-flying bees, but these early results indicate that it could be.

The whole role of vitamins in the bee's diet is poorly understood at this stage.

Herbert, E. W.; Vanderslice, J. T.; Higgs, D. J. 1985. Vitamin C enhancement of brood rearing by caged honey bees fed a chemically defined diet. Archives of Insect Biochemistry and Physiology 2: 29-37.



HE'S BEEN DOING IT SINCE TELECOM STARTED TALKING ABOUT NEW CHARGES.

HOW TO MAKE CREAMED OR GRANULATED HONEY

I am often asked what beekeepers add to honey to produce that smooth creamy texture; or how can I treat my honey to make it like the stuff I buy in the supermarket? That is if you are not one of those who like it as it comes, straight from the extractor, wax, pollen, bees legs and all.

First some background to help you understand what is going on. Honey consists mostly of the sugars fructose and glucose, and water. The relative proportions of the two sugars vary depending on the origin of the honey. Most honeys are super saturated with glucose; that is they contain more glucose than can be dissolved in the water component. The result of this is that the glucose crystalises out of solution, a process called granulation. The rate of granulation varies with honey type, depending upon the glucose and moisture levels.. eThe slower the granulation the larger and coarser the resulting glucose crystals and the crunchier the honey.

To Make Creamed Honey

1 Take some very smooth fine grained honey from last years crop.You have eaten it all? Then swallow your pride and go down to the supermarket and buy some.

2 Add the fine grained honey (starter) to your newly extracted and strained liquid honey. Five to ten percent is about right.

3 Mix in very thoroughly - this is easiest if the honey is warm. Don't go above 20 C or the crystals will start to melt.

4 Pack the mixture into containers.

5 Place in fridge for about one week. You will see the colour change from day to day as the honey granulates.

This creamed honey will keep indefinitely provided it is sealed from atmospheric moisture and not allowed to get too warm.

Honey that has already granulated can be liquified by heating. This is best done in a water-bath to avoid overheating and caramelising the honey.

EFFECTS OF EXAMINING OR MOVING HIVES

What effect does hive manipulation or disturbance have on a colony? We know that beekeeping books advise hobbyists to choose warm, settled weather for looking at their bees - is that for the sake of the bees or the beekeeper? And what about commercial beekeeping, where hives are opened in all weathers and often moved?

A number of experiments provide answers to these questions.

Effects on foragers

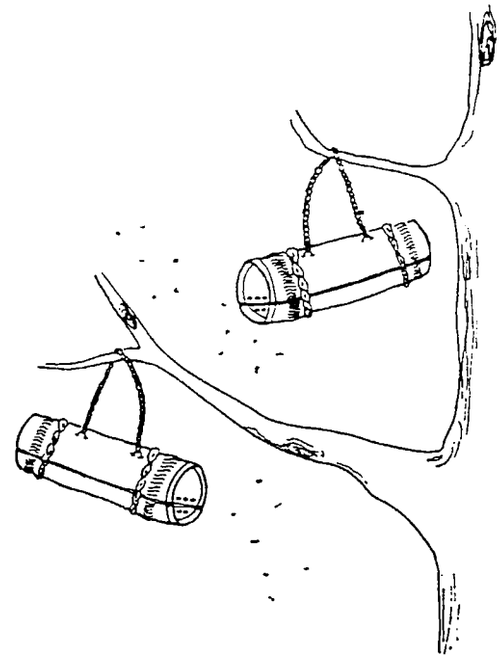
An excellent series of trials has been carried out by Dr John Free, one of the world's foremost pollination scientists. A number of hives were opened for 10 minutes and frames removed - a more extensive examination than a pollination audit. These hives didn't collect any less pollen (do any less pollination) than similar hives left alone.

So normal hive manipulations don't seem to have any effect on foraging efficiency.

Effects on weight gain

Steve Taber, when working for the USDA, looked at how colony manipulations affect colonies. He used the daily weight gain of the colonies as a measure.

Colonies were divided into three groups. One was not disturbed in any way (the control group). In the second group brood boxes were split, tipped up and smoked as for a swarm cell check. The third group had four frames removed and examined out of one brood box and six frames from another. The hives were open for about six minutes.



On the day of manipulation, moderately-disturbed colonies put on 20% less weight than the control group, and intensively-manipulated colonies gained 31% less. The weight gains ranged from 1.21 kg to 1.75 kg on the day of inspection, and the differences were statistically significant.

The day after manipulation there were small differences in weight gain between the three groups of hives, but these weren't statistically significant.

Taber suggested that the colonies examined gained less weight because of heat loss caused by the beekeeper's manipulations. The disturbance caused more significant heat loss and required more honey consumption to compensate for, but the effect didn't carry over to the next day.

So maybe there is something in the recommendation to hobbyists to pick a warm day. Use of temperature probes in the brood nest has shown that there is no drop in brood nest temperature if hives are opened on a 20°C day with no wind.

Effects of moving colonies - in summer

Here's a topical subject for the moment - how shifting hives affect the bees. Floyd Moeller of the USDA carried out some trials which show that shifting hives to new locations affects their performance, but that the actual moving process isn't the culprit.

He used four groups of colonies - one wasn't moved (the scientist's old faithful "control" group). The second group was moved out and back to the same spot in one night. The third group had one move to a new location, while the fourth group had two moves to different locations on successive evenings.

The trials were repeated for four years, and weight gains for the week following each test period measured. You can probably guess the results - the hives moved out and back on the same night didn't perform any worse that those left on site. The third group of hives (moved to a new location) did put on significantly less weight, and the hives subjected to shifts on two successive nights put on less again, though not significantly different from the third group.

It seems that actually shifting the hives didn't cause the colonies any significant loss, but being in a new location did. This is probably caused by the foraging time and energy wasted reorientating to the new position.

Shifting hives - in winter

Moeller also shifted hives in winter, and found that this caused the colonies to consume more honey. The trial involved over 240 hives, and the results look like this:

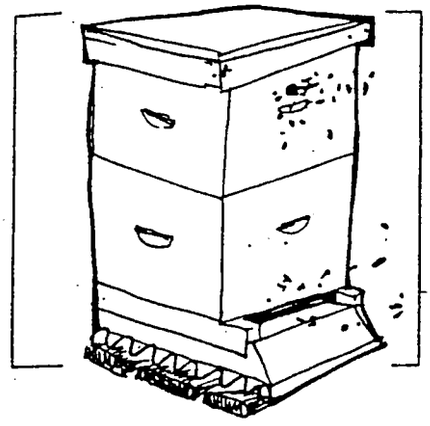
Number of moves	Average winter honey consumption (kg)
0	25.0
1	30.4
2	34.0

The differences are significantly different.

These experiments were carried in Wisconsin in late November, when it's mighty cold. There was no bee flight (temperatures always below zero), so reorientation wasn't a factor. Moeller concluded that the disturbance of shifting caused colonies to break cluster, become active, and lose heat.

Shifting hives - into orchards

You've all seen hives go berserk in orchards and start pulling pollen in very smartly. Bees in English pear orchards have been seen returning with pear pollen loads only seven minutes after the hives were opened. Does anyone have a record like that for kiwifruit?



A word of warning

These results can only be guidelines. Just because some experiments somewhere have shown a result under certain conditions, it doesn't mean that this will always be the case, either in that location or in New Zealand. However, they do give us some ideas of what could be going on, so to sum up -

* examining hives doesn't affect their pollinating efficiency.

* examining hives in summer may increase their honey consumption (decrease weight gains).

* moving hives in summer probably doesn't affect them much (if done correctly), but shifting them to a new location does.

* shifting hives when bees are clustering does increase consumption of honey stores.

Remember though, that all movements and examinations of hives are done for a purpose. While there may be harmful effects on the bees under some circumstances, the consequences of not carrying out your management are probably more serious.

BEEKEEPING GEAR FOR SALE

Good clean 4 frame extractor and uncapping outfit with honey gate - price negotiable - ph. Doug Welch (089)489491

Pollen traps - 4 - offers wanted - ph. Derek Bettesworth (089)61777

Botulism has again been linked to honey as a health risk for infants, and this latest scare is affecting some New Zealand exporters. People shipping honey to Japan are having particular trouble.

The link between botulism and honey was made in the late 1970s. We haven't heard much about it in New Zealand before, so why is it causing a problem now? This article discusses the connexion between botulism and honey, and recent events in Japan that are giving our exporters a sticky time.

Botulism is a type of food poisoning that is very rare but also very serious; over half of affected people may die. The poisoning results from a toxin produced by the bacterium Clostridium botulinum. The toxin is said to be the most poisonous substance known; one gram of it could kill over 14,000,000,000 average-sized humans.

The bacterium Clostridium botulinum is very common and occurs nearly everywhere, including on the raw vegetables we eat. The spores have been regarded as harmless to humans, as they can't germinate inside our intestinal tracts. We only contract botulism when we eat foods in which the bacteria have survived cooking, and produced toxin before eating. Botulism is usually associated with faulty preserving or canning processes.

In 1976 all these ideas changed. It was found that the botulism toxin could be produced after spores were ingested, but only in infants less than 6 months old. Their gut flora is less developed and the digestive tract is less acid than in adults. It is fortunate, though, that toxin production in infants after spore ingestion takes place only slowly, so the condition can be treated fairly successfully. Mortality rate is low.

When this story hit the airways in the US in the late 1970s a lot of detective work was put into finding a link between the affected infants. Quite a few had been fed honey (surprise, surprise), and some honey samples were found to contain Clostridium botulinum spores.

This caused a great stir in the US honey industry, with suggestions being made that honey containers should have health warnings about infant feeding. Since then further studies have shown that:

- very little honey contains spores of C. botulinum;
- the spores can be found in plenty of other food.

Type A botulism (the sort found in honey) does occur in New Zealand, but is not common. No botulism of any type has been found in the limited number of tests made on New Zealand honey. If you are asked for documentation about C. botulinum for any of your exports you should contact the Health Department in the meantime, as they are able to carry out sampling and certification. MAF and the Health Department are currently investigating New Zealand honey and botulism further.

Q - How many frames do you suggest in the broodnest and why?

A - Nine frames in the brood nest is usual in NZ. Langstroth boxes, which are standard in NZ are designed to take 10 frames. the problem is that as propolis builds up on the end bars the frames become wider and soon 10 frames become a very tight fit, making taking out the first frame a very difficult operation.

As usual there are a couple of complications. When drawing out foundation 10 frames in a box is best to encourage even comb building. Recently manufactured frames built to metric dimensions are 1mm narrower than frames built to imperial measurements, and will easily fit 10 to a box even after propolis buildup. If you can get 10 frames in a box and retain ease of manipulation then you should do so to give the queen that extra comb area to lay in.

In honey supers combs to be used for extraction can be spaced at 8 per box, both to economise on frames and to produce fat combs which are easier to uncap.

Q - When is the best time to draw out cells in the Jentner egg laying cage?

A - The Jentner queen rearing system has a wax egg laying cage to obtain larvae of the correct age to be rear into queens . The wax foundation has to be drawn into cells before the queen is confined to lay.

The only time bees will draw comb from foundation is during a honey flow. If you need to have comb drawn at any other time you can do so by creating an artificial honey flow by feeding a thin sugar syrup(equal parts sugar and water).

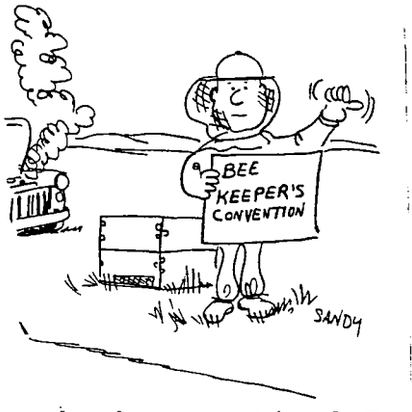
Q - Do you recommend a crown board on top of the top box or strips under the lid to give bees room to move over the top bars?

A - It doesn't seem to make any difference to the bees so do whatever you like best.

Q - Which is the best lid? The telescopic type which fits over the top box or the migratory type which sits on top of the top box?

A - Both types have their uses. The telescopic type is less

likely to be blown or knocked off and is easier to make bee tight so would generally be best for a hobbyist .The migratory lid is best when hives are being shifted frequently, as in kiwifruit pollination, as it allows hives to be packed more closely and securely on a truck. As it relies on propolis to hold it on it is safest to use in combination with a hive strap.



Q - Which would be the best option? Buy offcuts of timber and convert them into hive components yourself, or buy ready made supers?

A - If you already own the necessary woodworking machinery, have sufficient spare time and the required woodworking skill then by all means make your own.If you do not possess the above then take the number of supers you require, multiply by the amount of money you expect to save per super and make your decision on the difference between this answer and the cost of the above mentioned requirements.

Q - Which is the best super,commercial or dovetail?

A - Commercial every time. Cheaper and will last much longer as it does not have all those extra surfaces to collect water and eventually rot.

Q - Out of a batch of commercially produced queens most were excellent but some are poor layers with small brood nests. Is this the queen breeders fault or the result of the recent poor season?

A - Without weighing and dissecting one of the offending queens it is impossible to be sure of the cause of the problem. Factors producing poor queens which are under the queenbreeders control include starting with larvae which are too old, giving starting and finishing hives more cells than they can feed properly, using breeder queens infected with halfmoon disorder and not using Fumadil B to prevent nosema infection.

During periods of bad weather virgin queens are sometimes unable to mate properly, this is particularly a risk with early spring and late autumn queens. You can avoid this by buying queens in Nov. Dec, Jan or Feb.

Queens can also be damaged by being chilled or overheated in the mail, or being kept too long in the mailing cage before introduction. In this case the beekeeper is the guilty party.

MAF

The Leading Edge

QUEEN QUALITY ASSURANCE SERVICE - APPLICATION

Queen weight only - live queen returned (return postage included in charge)

☐ tick if required Cost $5 per queen (GST incl)

Queen quality - full test

Tick tests required		Cost per test (GST incl)
☐	queen weight	$2
☐	spermatheca volume	$2
☐	total number stored sperm	$2
☐	ovariole number	$2
☐	Nosema spores in queen	$2
☐	Nosema spores in attendant workers	$2
	Charge for full test	$12

☐ please phone collect with results as soon as available

Name : _____

Address : _____

_____

Phone : _____

Instructions

1. Mail line queens with attendant workers in your normal mailing cages.
2. Include this application form in the parcel.
3. Address to - D. Bettesworth
   Apicultural Advisory Officer
   Ministry of Agriculture & Fisheries
   P.O. Box 943
   Whangarei
4. Important - beside address write :
   Please phone 487179 on arrival
   or 61777 after hours
5. Make cheques payable to MAFQual.

Wherever possible results will be in mail on the day after the queens arrive.

QUEEN QUALITY ASSURANCE SERVICE

QUEEN BREEDERS - Are you satisfied your queens meet both your own quality standards and market requirements?

BEEKEEPERS - Is performance of some of your hives below expectation? Poor quality queens could be the reason.

EXPORTERS - Does your market require queens meeting specified quality standards? Can you assure this without testing and certification?

BACKGROUND

1. Queen weight is highly correlated with colony population and subsequent honey production. Queens produced from young larvae and reared under optimal conditions should weigh at least 200 mg.

2. Ovariole number determines a queen's maximum daily egg laying rate and ultimate colony size. Three hundred ovarioles is a standard for good quality queens.

3. Spermatheca size determines the amount of sperm a queen can retain after mating and should be at least 1.0mm^3 in queens raised from 1 day old larvae.

4. A well mated queen should carry about 3,000,000 sperm.

5. Nosema infection of queens is a major cause of supersedure. Workers used for attendants should also be free of this disease to avoid queen infection.

METHODS Used for this service are based on those used by Cliff Van Eaton in his 1985 NZ queen quality survey.

PRICING - Costs have been set at a nominal level to encourage use of the service this export season. The quality of queens exported this season could have an important bearing on the size of future markets.

EXPORT DOCUMENTATION

MAFQual can provide a document certifying that a stated number of queens were selected at random from a particular consignment; quality characteristics measured; with the results displayed. This documentation will require a MAFQual officer to collect a random sample during packing which could incur extra charges for time and travel.

FOR FURTHER INFORMATION on this or any other aspect of the queen quality assurance service contact :

Derek Bettesworth
MAFQual
P.O. Box 943
Whangarei

Phone 487179 work
or 61777 home

Really Harv, I think a simple red dot on her back would have been sufficient to mark her.

PLEASE SEND IN YOUR QUESTIONS FOR THE NEXT ISSUE

READERS BEEKEEPING EQUIPMENT ADVERTISEMENTS ARE INVITED