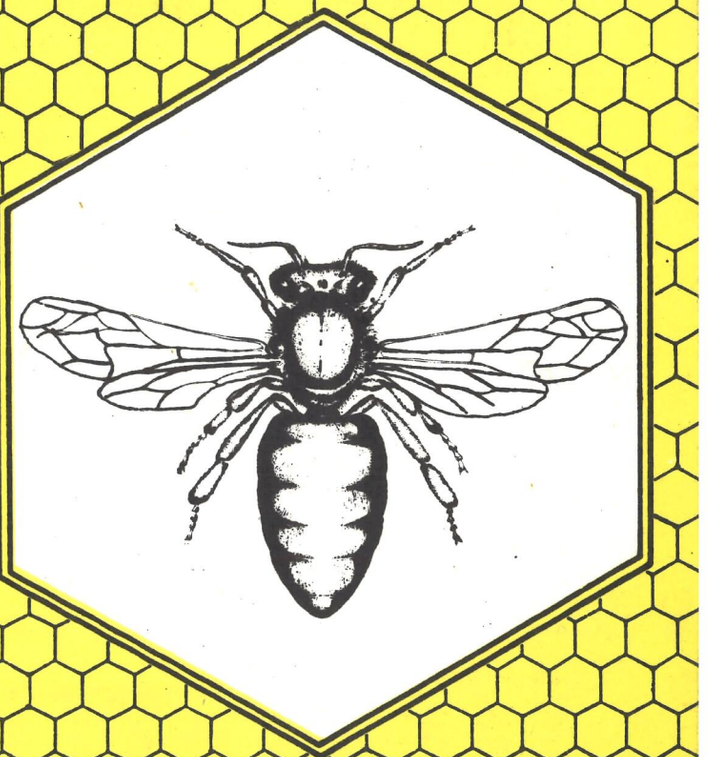

beelines

Number 33 November 1987

MAF Tauranga Andrew Matheson Apicultural Consultant

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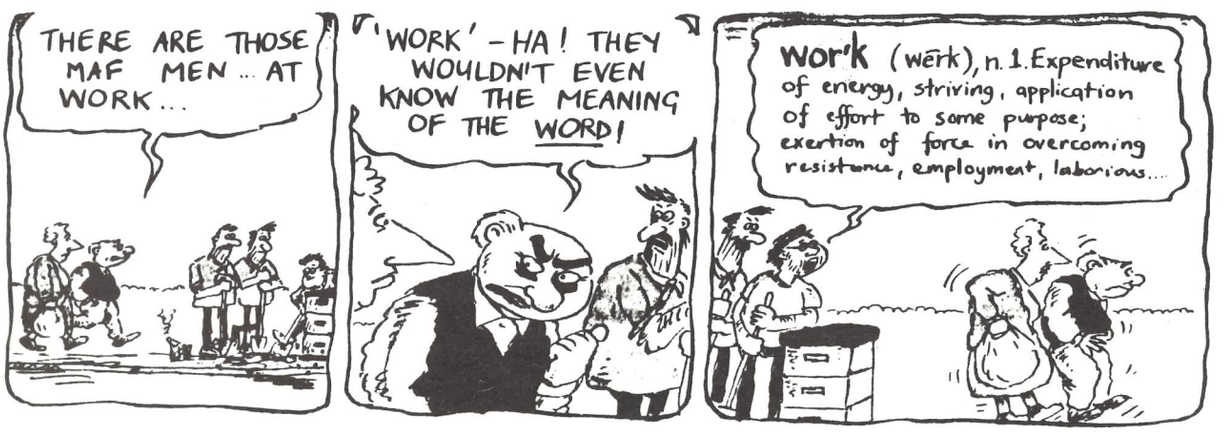
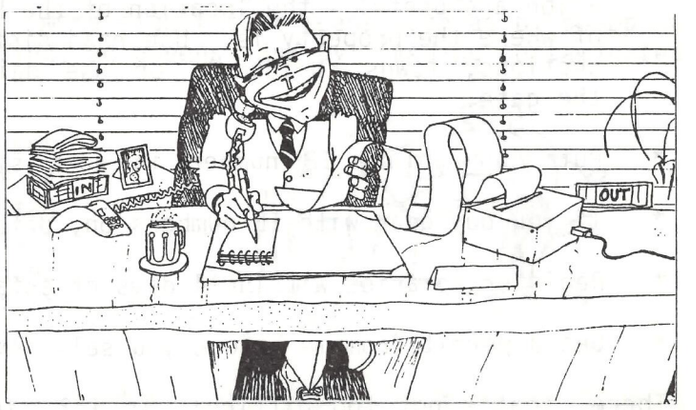


Well, it looks like we all made it through pollination without too many crises. The weather during blossom time was good enough to ensure that bee flight wasn't a limiting factor. That's for the Bay of Plenty, but I'm sorry to say it was a different story in Poverty Bay. This year will be remembered as the one with the 'Grey November'.

I'm pleased to see how diligent most beekeepers were about sending in lists of pollination sites. Thanks for being so prompt - it makes my job a lot easier, and is of infinite help in the event of a disease outbreak. Of course these lists remain totally confidential.



I say 'most' because there's always a few in the industry who don't play ball, and I think I've heard all the excuses like "I thought the orchardist had to do it"; "Is this a new requirement?"; and the old standby of "I forgot".

The statistical information about numbers of hives used is useful to your industry too, and I'll report on this in the next issue.

Now that pollination is over and the hives are out on their summer sites, here's some reading for you. This bumper issue of Beelines has a lot of interesting items, so put your feet up and read on ...

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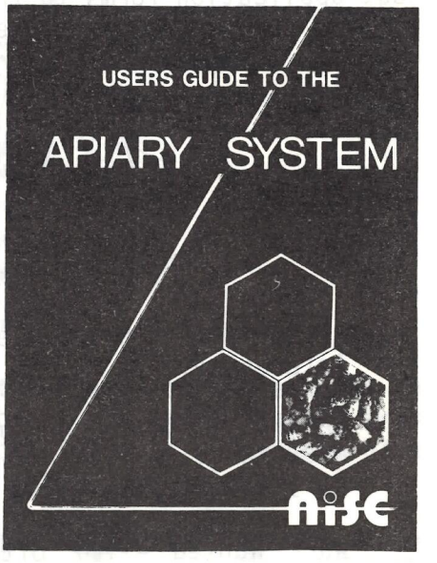

HELP US TO HELP YOU

Those of you who were at the last NBA meetings in Tauranga or Gisborne will have heard me mention some of the things I'm doing to improve MAF's disease monitoring programme. In these days of limited resources it's absolutely vital that we all do our bit to make the system work efficiently.

Remember that it's your disease, your industry, and your livelihood. To help us to help you, please remember to:

* Report AFB promptly. Use the yellow forms, jot a note, or ring me up. The office phone number is (075) 82 069 - if I'm not in leave a message with the

necessary details (apiary name and location, number of BL). My home phone number is (075) 66 911, and from 17 December it should be (075) 66 422 (or available through directory). List the AFB on your annual statement of inspection too, with the date it was found. It won't be double-counted.

* Give us full details of apiary site locations. The minimum needed is the name and initials of the landowner or occupier (whichever's on the gate), property name (if there is one), road, locality. Two other bits of information are useful - the location of the hives on the property, and more details of where the property is. Use road distance from identifiable points (intersections, towns, bridges), or use dairy company numbers if these are on the gate.

* Put your apiary ID number in each site (including pollination sites).

* If you buy gear with ID numbers on, deface the old marks.

* Register apiaries within 14 days of establishing them.

* Get a permit from me before you sell any hives.

There, that's not too difficult is it? These few things will really make our disease monitoring programme a lot more efficient.

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COROMANDEL AND EASTERN BOP

If you keep bees in either the Coromandel or eastern Bay of Plenty restricted zones, then you need a permit to do so. A couple of months ago this office sent out application forms to those people known to be keeping bees in these two areas. If you haven't received one but think you should have, please get in touch with me.

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TRADE TABLE

* Propolis - We have an enquiry from Queensland for names of producers. Anyone interested?

* Supers - Three-quarter depth, good condition, paraffined and painted, 8 Hoffman frames with white combs. $20 plus GST. Contact Murray Reid (071) 81 949 (work) or (071) 494 673 (home).

* Work wanted - MAF often gets queries from overseas for summer beekeeping jobs, usually from benighted poms wanting to see the sun. Contact me if you're interested.

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.

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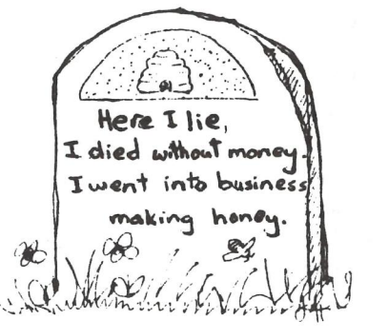
HOW MUCH CHALKBROOD?

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.

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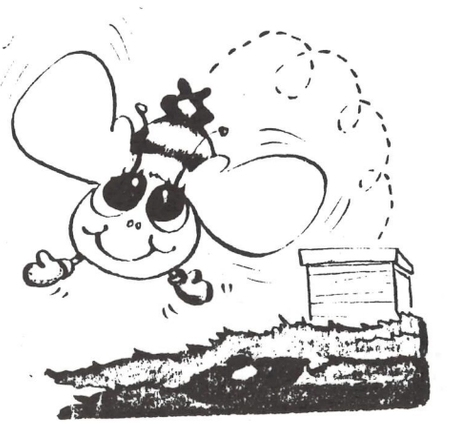
... AND HOW CHALKBROOD INFECTS LARVAE

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.

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QUEEN BEES TO FIJI

A contact in the Fiji Ministry of Primary Industries tells me that Fiji is no longer issuing general import permits for queen bees from New Zealand. They have made this decision because of the widespread nature of chalkbrood here. Permits will still be issued for queens that are essential for queen bee breeders and scientific research.

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IT'S A SERIOUS MATTER

MAF's quarantine campaigns are for real. It would be a disaster for your industry if certain exotic diseases or pests got into the country. EFB you know of - it can come in through honey - but there are two serious parasitic mites we're also very concerned about.

The two mites which threaten our beekeeping industry are Varroa and Tropilaelaps. The first of these is getting a lot of publicity at the moment. Varroa is normally a parasite on the Asian honey bee, but successfully crossed over to the western honey bee (the one we keep). It's busy hitch-hiking round the world, causing disasters at every stop.

Most of you will know already that Varroa was reported from the USA in October. Last news was that it had been detected in eight separate states, and is thought to have originated in Florida.

Tropilaelaps is a bit more of a mystery. Its natural host is the giant honey bee, and hails from Varroa's original home of Indonesia. It has also made the switchover to Apis mellifera but so far hasn't been transported to other continents.

What sort of damage does Tropilaelaps do? When I was at a tropical apiculture conference in Nairobi three years ago I spoke with some people who had experienced this mite. The news wasn't good. Brood is parasitized, often to the extent where 50% of larvae don't emerge. Affected adults that do hatch out don't live for very long, and usually the colony dies or absconds.

Both Varroa and Tropilaelaps can infest the same colony, but in these cases Tropilaelaps out-competes Varroa by as much as 25 to 1. The feeling I got from talking to Thai beekeepers and bee scientists is that Tropilaelaps is more of a worry than Varroa.

One person at the conference had a different view. Dr Woyke of Poland reckoned that in cold climates, where there's a break in brood rearing, Tropilaelaps can't survive. He said that as the mites can't live away from brood for even short periods, temperate beekeepers are safe from this species. He declared himself so convinced that he'd be happy to introduce the mite to Poland. I, and others at the conference, remained unconvinced.

Now an interesting research paper gives us a clue to answering this difference of opinion. The mite was first discovered (in 1961) on field rats nesting near beehives as well as on dead bees. In a paper yet to be published, a scientist has studied the mouthparts and feeding behaviour of Tropilaelaps. The species appears to feed on a wide variety of substances, and may use mammals (like rats) as an alternative host during the honey bee's broodless period.

The findings reinforce the view that this mite would be a dangerous pest of western honey bees in temperate areas, where colonies have a broodless period.

News has just come through that Tropilaelaps has been found in Papua New Guinea. PNG has a thriving beekeeping industry run by some very capable people, which was initiated in the 1970s as part of New Zealand's overseas development programme.

Tropilaelaps seems to have spread into PNG from the Indonesian-controlled western half of the island, Irian Jaya. The mite was apparently brought there from Java with the Asian honey bee, shifted with Javanese settlers as part of an Indonesian migration programme. PNG authorities will try and keep Tropilaelaps out of the highlands, where the beekeeping industry is based.

Now the Australians are worried, because if Tropilaelaps spreads through PNG it could be transported to Australia with bees across the Torres Strait or in cargo.

The message for New Zealand is plain. Any single illegal importation of bees could spell disaster for our apicultural and horticultural industries.

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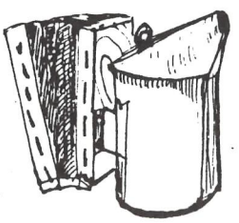
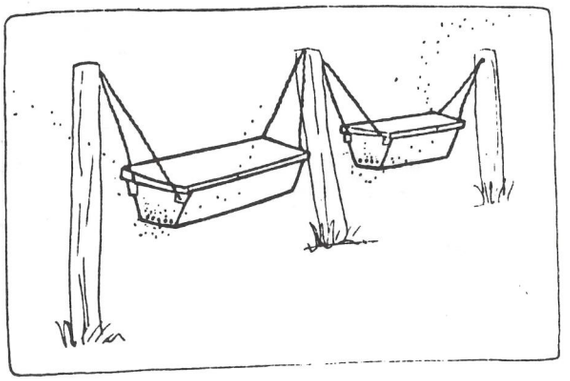


MORE UNWANTED PROBLEMS

Another pest we don't want in New Zealand, but fortunately one that's unlikely to ever get here, is the honey badger. This is a powerful and fierce animal that lives in tropical Africa.

About a metre long, the honey badger (or ratel) is able to push heavy hives off stands, and break through 20 mm timber with its claws. It steals combs without seeming to be worried by stings, and is one of the reasons that African hives are usually suspended above the ground. Beekeepers also put cage traps out for it.



I must admit to being a little nervous when I first heard about these while visiting apiaries in Kenya, and saw the size of the traps needed. This animal will attack humans if it is cornered. In his book Beekeeping in the Tropics, F G Smith notes that the honey badger "knows no fear, attacks with a hissing snarl, has very powerful front legs armed with long claws". He also advises that "it goes for the tenderest parts". I understand this can be a serious problem for men.

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HOT POLLEN

Tests in New South Wales have shown that pollen can be irradiated sufficiently to sterilize any BL present, yet still remain attractive and nutritious to bees. The pollen's amino acid and crude protein levels remain unaffected.

Pollen feeding is a great way of spreading disease, but these results indicate that pollen can be treated before being fed back to bees.

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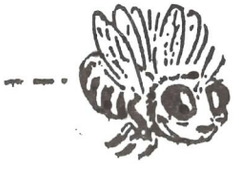

BEEKEEPER IN CHINA

From Tom Newnham's "Shandan Diary" in the Listener:

"From horizon to horizon the rolling downland was bright gold with rape flowers. And the bees! On that one roadside I estimated there were 30,000 hives. The beekeeping families live in tents with their hives and they have come from Sichuan or Zhejiang provinces for the summer, moving around Gansu as the crops ripen at different times.

We were invited into one tent. The father (63) said they had come 2000 kilometres from Zhejiang and he had been doing this for the past 13 summers. This time he had his teenage son and daughter with him. The honey was exported to Japan, he said, and before I left he poured me a large bottle full from the 44-gallon drum. He had 100 hives."

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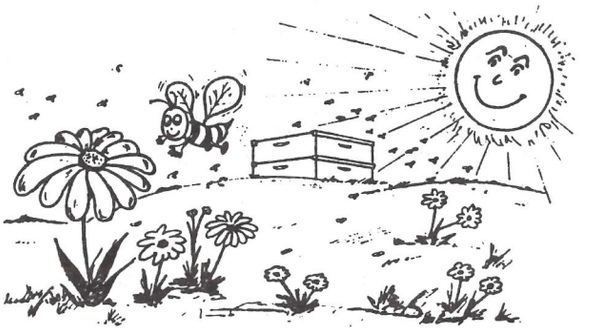
NUCLEAR-FREE HONEY

"Our honey doesn't glow in the dark" - that could have been New Zealand's slogan in Europe, according to a speaker at this year's NBA conference seminar.



New Zealand deliberately avoided capitalizing on the unfortunate accident at Chernobyl, but Richard Buchanan of Massey's marketing department thinks we should have gained more advantage from our unique position.

Be that as it may, the awareness of radiation contamination in Europe is now affecting some Kiwi beekeepers. Following the Chernobyl accident the West Germans are requiring that a statement about radiation levels of honey accompanies our honey export certificates.

You couldn't hope for more nuclear-free honey than New Zealand's, but the German authorities still insist on a certificate from a recognised radiation laboratory.

The National Radiation Laboratory in Christchurch will supply these - at the cost of $2 each. For further information contact Dr Mathews at (03) 65 059.

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While on the subject, this letter came from (where else?) California:

Dear People

This letter is to find out if I can order your New Zealand honey directly from your company. I bought a small jar at a local market. The honey is good and I want to support your country. I am told it is a nuclear-free zone. Please let me know if I can buy larger sizes.

Thank you

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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.

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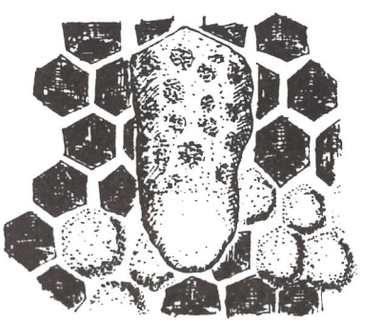


EFFECTS OF EXAMINING OR MOVING HIVES

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

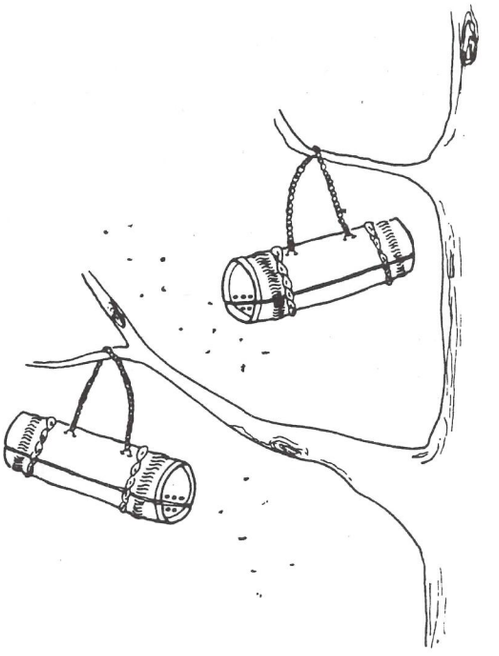
An excellent series of trials has been carried out by Dr John Free, one of the world's foremost pollination scientists. A number of hives were opened for 10 minutes and frames removed - a more extensive examination than a pollination audit. These hives didn't collect any less pollen (do any less pollination)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

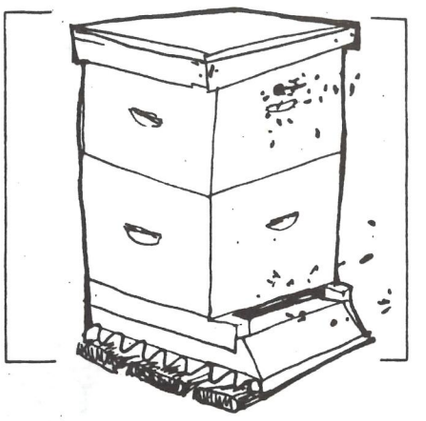
Moeller also shifted hives in winter, and found that this caused the colonies to consume more honey. The trial involved over 240 hives, and the results look like this:

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.

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BEE STING DEATHS

Death from bee stings is uncommon. Statistics aren't easy to come by in New Zealand, but a recent study in Australia puts the sting problem in perspective.

During the 22 years from 1960 to 1981, 25 deaths from bee stings were recorded by the Australian Statistics Department. That's a minuscule 0.086 deaths per million population per year.

Fatalities were predominantly among men over 40 years old, which suggests that there may be other contributing factors such as heart condition. No deaths were recorded in individuals from 6-19 years, the age group in which bee sting anaphylaxis ("allergy") is most common. (This is also the age group that runs around in bare feet all summer, getting stung in the feet.)

The figures show that death by bee sting can be classed as a freak occurrence. This may be worth remembering if the advent of Africanized honey bees in North America increases public hysteria about bees.

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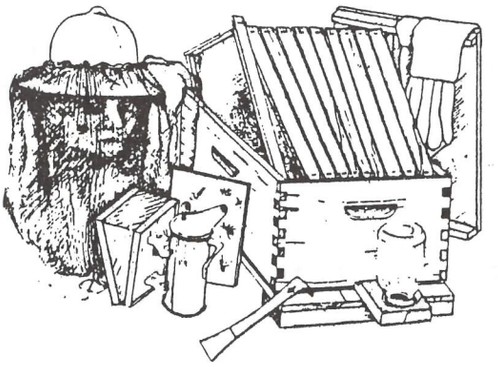

STORY OF THE MONTH

From Bruce White's column in a recent issue of The Australasian Beekeeper comes this little number entitled "Kiwi Enterprise".

"New Zealanders have a world-wide reputation for the skills they use to market agricultural products. This skill has enabled them to obtain world-wide markets for all agricultural products. They are now using their skill on the domestic market for a byproduct of the bee disorder half-moon.

A member of the Australian study tour group which recently visited New Zealand called in to the Italian restaurant La Trattoria in Auckland - there on the menu was Torteffine alla Guineppe Verlie (delicate half moon pasta)."

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KIWIS INTO CANADA

Dr Ben Oldroyd of the Victoria Department of Agriculture in Oz recently visited North America on a study tour. His comments on Australian access to the Canadian queen bee market are interesting.

"It was very disconcerting to contrast the effort put into potential exports by the New Zealand MAF with our own effort. The Canadians knew all about New Zealand, but very little about us. Congratulations to New Zealand."

(From the June 1987 Australasian Beekeeper)

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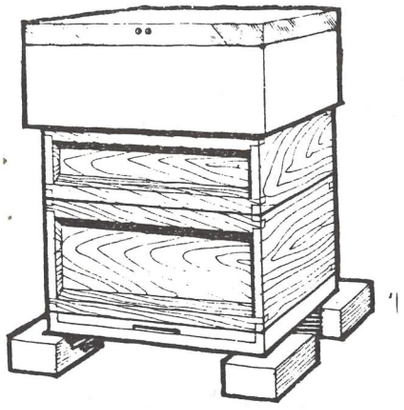

A HEALTH FOOD

I'm sure the image of honey as a health food is good for sales of our product. But of course honey isn't a healthy food - it's packed with energy but has next to no food value.

Let's see how you get on for vitamins and minerals on a honey diet. To reach the recommended (US) daily intake on honey alone, you'd eat the following amounts:

Nutrient	Amount of honey per day
Energy requirements	920 g
Vitamin C	2.6 kg
Riboflavin (a B-group vitamin)	6 kg
Iron	9 kg
Vitamin B_6	16 kg
Vitamin B_1	31 kg
Zinc	39 kg
Magnesium	287 kg

And after wading your way through all that you'd still be suffering from deficiencies of vitamins A, D, E, H and folic acid - honey's completely lacking in those.

But maybe we shouldn't knock honey too much. A recent report from Wales tells us about the world's oldest man celebrating his 110th birthday. He takes a little honey in boiled water every morning (though he also attributes his long life to not drinking alcohol, smoking or swearing).

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'TASTE NEW ZEALAND'

Tourists' imaginations will be captured next year with good ol' Kiwi tucker. Food is the theme for the Tourist & Publicity Department's promotion in 1988.

'Taste New Zealand' is the name of the campaign, and will be used to project New Zealand's clean environment and fresh, natural produce to visitors from countries where these values are lacking.

The campaign will promote distinctive New Zealand food and wine, as well as farming and horticulture.

Honey producers, how about planning now to contribute to this programme.

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Q: Why is your average Aussie like a computer?

A: You have to punch information into both of them.

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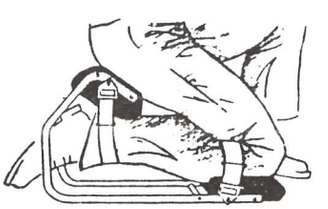
GADGETS AND GIZMOS

Craftseat - just what the doctor (or at least the ACC guy on TV) ordered, especially for brood inspections and mating nuc work. The seat straps to one leg so you can walk around (with your hands full) from hive to hive. When you bend down the rear bit supports your back. Not a bad idea.

The only contact I have for this is:

Giguere Honey Farm Supplies
Box 2
St Germain
Manitoba ROG 2AO
CANADA



Electronic Extractor Controls - Murray Bennie, the engineering wizz from down in Central Otago, is now offering a fully automatic electronic extractor control.

The unit includes a 750 watt self-braking motor and programmable control, and fits on any standard radial, semi-radial, or reversible extractor.

The control is a series of silicon chips which can be programmed to any setting from 1 second to continuous running. There are enough chips to allow you to programme up to five direction changes with independent timings.

Price $1,500.

Contact: Bennie Engineering
24 Northland Street
RANFURLY

Phone RNF 59S

Gentech Liquid Level Sensers - a new, low-cost float switch system for sumps, honey tanks, and barrel fillers. Made of non-corrosive materials (nylon or polypropylene) with excellent reliability. A typical set-up with 12 volt transformer and bell would run to around $77.

Contact: El-Tec Marketing
PO Box 515
Manurewa
AUCKLAND

Phone (09) 2669305

IAEA - not really a gadget or a gizmo, but a great way to arrange good, highly-motivated labour from overseas. The IAEA is the International Agricultural Exchange Association, a non-profit organisation which sets up agricultural exchanges for young people. Started in 1963, the organisation has gone from strength to strength and now places trainees in over 18 foreign countries.

Young people seeking an overseas agricultural job join the organisation pay a fee which includes airfares and administration, and are then placed with a host family in the country of their choice.

Host families provide meals and accommodation, the job, and a trainee allowance.

Placements are for six to nine months and the best thing is that IAEA handles all Labour Department and work permit hassles.

Several beekeeping enterprises in the South Island have used this programme very successfully. Jill and Tony Clissold, of Glass Brothers, take on one or two trainees every year. They find the trainees bright, motivated workers and really enjoy the experience they get from the cultural exchange.

If you're thinking of hiring overseas people or you think one of your kids might benefit from a year overseas contact:

IAEA
Armstrong House
PO Box 328
WHAKATANE

Phone (076) 70 086

International Agricultural Exchange Association
P.O. Box 328, Whakatane.

Telford Training - and if you can't afford to send the 'up-and-coming' overseas, why not consider the Telford beekeeping training programme. Tertiary bursaries are now available for this one-year 'hands-on' course, which should go a long way to defraying expenses.

For more information about the programme contact:

Ian Lyttle
Principal
Telford Farm Training Institute
Private Bag
BALCLUTHA

Phone (0299) 81 550

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Q: How do you keep a turkey in suspense?

A: I'll tell you in the next issue.

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being well informed

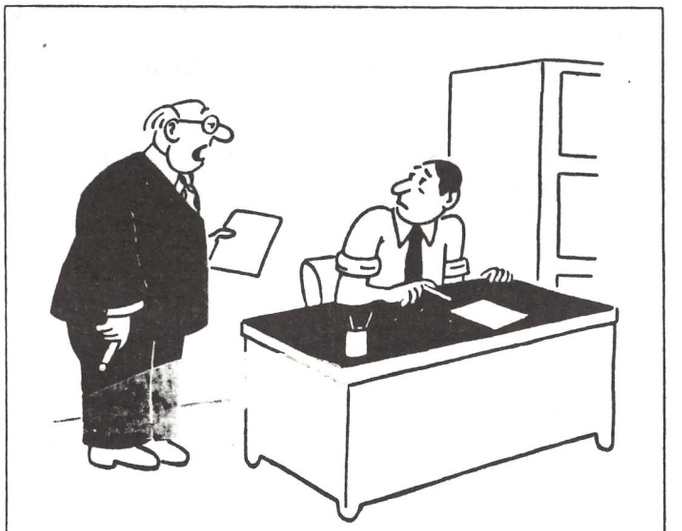
MAF RE-ORGANISES

On 1 April (no, I'm not kidding) MAF underwent a major restructuring. Instead of nine divisions there are now four business units: MAFQual (regulatory and quality assurance); MAFTech (research and most consultancy); MAFFish (you guessed it); and MAFCorp (administrative support).

There was also a regional change. Instead of eight regions there are now four. The Bay of Plenty is part of the northern region, which includes the whole top half of the North Island.

With the change there's a lot of slimming down to be done, especially in management. You have already seen some reductions in servicing the beekeeping industry.

The other big change is still (yes, still) to come. The proposal for an annual registration fee to fund the apiary registration programme will require an amendment to the Apiaries Act, and won't be put into effect until next season. The NBA is still negotiating an increase in the hive levy (paid by beekeepers with 50 or more hives) to fund an inspection survey which will be contracted out to MAF.



"I want you to know your job's secure — they'll never invent a robot that does nothing."

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TRADE TABLE

* Pallet Handling

Merton Equipment Ltd, PO Box 13-111, Onehunga, Auckland (telephone (09) 669 572) produce a good range of pallet trucks for in honey houses, as well as hand barrows, drum barrows, drum cradles (for tipping drums on their side), and a hydraulic drum lifter.

Local agent: Bay of Plenty Forklifts, 98 Birch Avenue (PO Box 804), Tauranga. Phone (075) 83 650 or 66 963 (after hours).

* Half Comb Honey

A novel comb honey system was on display at conference this year. Robin van Berkhout of Hastings is selling 'half comb' equipment.

Each super looks like it has 10 frames in, but actually the 40 half comb boxed are taped together into a solid block. This block is jammed into the super.

Instead of building a comb around a foundation midrib, the bees build a one-sided comb in a plastic box (hence the term 'half comb'). Each box has cell shapes imprinted on the base, which is sprayed with wax.

When full the boxes are removed, cleaned, lidded and sold. There's no cutting involved.

I have no knowledge of how this works in practice, but will be watching with interest this season. For further information contact:

Twyford Honey
Omahu Road
RD5
HASTINGS

Phone (070) 798 488

* Honey Grading

Want to get a handle on what your honey's like? MAF's Lynfield office is offering a honey grading service. They can check for moisture content, colour grade, floral source, flavour class or physical impurities.

For further information contact:

MAF Plant Protection Centre
PO Box 41
AUCKLAND

* Feeders

Chris Robinson (Riverslea Road, RD2, Hastings; (070) 84 588) is making four litre division-board feeders. They're tin with a wooden top bar, come already filled with bracken and are paraffin dipped (to hold the bracken in place). Price $4.18 GST inclusive.

Keith Bidmead is having some plastic division-board feeders made. These replace two frames in the hive, and are completely plastic - including lugs. They come coated with sand on the inside, doing away with bracken, and are boilable. The feeders are full-depth, but three-quarter can be made if there's interest. Price $6.50. Contact Keith at (075) 411 433 or 79 354, or c/- 39 Edgecumbe Road, Tauranga.

* Other bits and pieces

Keith Bidmead is also stocking stamped nylon queen excluders and Emlock metal hive straps.

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METALS IN THE HONEY HOUSE

I'm sometimes asked what metals are safe to use in honey processing equipment. Well, the trend to stainless steel in honey houses over the past few years hasn't been for fun - there's really nothing else that's suitable.

Most metals are out for use around honey because honey is such an acid food - about as acidic as vinegar and wine.

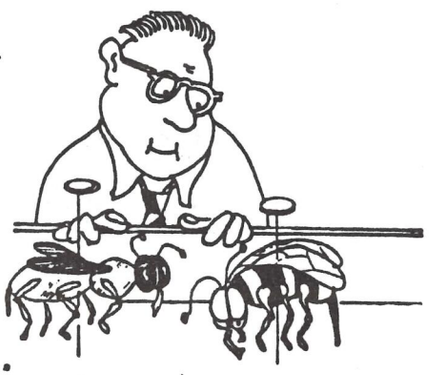
Aluminium is widely used in the food processing industry, but is not suitable for contact with acidic foods like honey. Likewise iron, galvanized iron, tin plate and copper all corrode in the presence of honey.

It's been shown that honey passing through a galvanized extractor contains more zinc than that taken directly from the combs. High levels of zinc can be toxic to humans.

Even if you have all stainless gear, metals can enter your honey by odd routes. It's common practice to hang something like baked bean tins under honey gates to stop drips going onto the floor. Don't tip the accumulated honey back into the tank - these tins have been sampled and found to have huge levels of metals like tin (from the solder).

In a recent review of the use of metals in honey houses Roger Morse writes that the stainless steel preferred by the food industry contains 18% chromium and 8% nickel, with what he calls a number 4 finish. Stainless steel has been tested to see if honey picks up chromium or nickel, but the levels imparted to acidic foods are very low.

He also remarks that in the US the beekeeping industry has been largely ignored by the health authorities, and so hasn't been forced to switch to stainless steel.



"This is the last time I go to an acupuncturist with my back problems."

There was a bit of squawking by New Zealand beekeepers when the Food Hygiene Regulations were extended to cover their industry in the mid 1970s, but the net effect has been a big improvement in honey house equipment. Stainless steel isn't mandatory, but is highly recommended.

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President Mitterand, Mikhail Gorbachev and David Lange were standing in the Garden of Eden watching Eve share the apple with Adam:

"How romantic they look", sighed Mitterand, "evidement they are French."

"Nyet", said Gorbachev, "see how they share the apple like good communists? They are Russian."

"No, no, you're wrong", boomed Lange: "nothing to wear, nowhere to live, practically nothing to eat, and thinking they're in Paradise. They're Kiwis!"

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It used to be that fools and their money were soon parted - now it happens to everyone!

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FOOD POISONING AND HONEY

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.

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Overheard in an accountant's office:

"It's not my problem if my client wishes to go bankrupt - it is my job to help him reach his objectives."

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SUPERSEDURE AT IBRA

The International Bee Research Association, IBRA, is now queenright, or rather, kingright. Following Margaret Adey's resignation IBRA have appointed Vince Cook as their new director.

This means IBRA has an honorary kiwi at its head. Vince spent a number of years in New Zealand; commercial beekeeping, then as a MAF apicultural advisor, then as chief apicultural adviser in Wellington.

Vince returned to Britain in 1980 to work as National Beekeeping Specialist with the UK MAF. He's recently written the useful book 'Queen rearing simplified'.

I'm sure that kiwi beekeepers will join with me in wishing Vince success at his new post.

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Remember:

"It's nice to be important
but it's more important to be nice."

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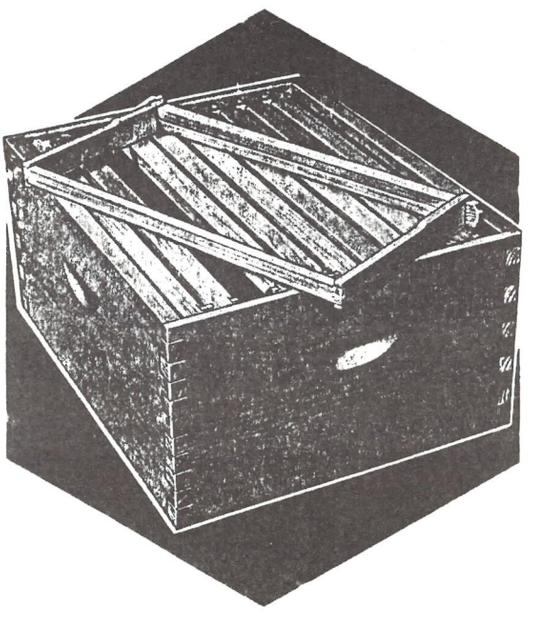
WATCHING WOOFTERS AT WORK



The latest new gizmo on the kiwifruit pollination scene is the 'woofter poofter', alias the airflow pollinator. This machine is really quite simple - it sucks pollen off male flowers and blows it onto females, either at the same time or later.

The woofter poofter is a petrol-driven Honda motor attached to a blower unit. One (or sometimes two) hoses are attached to the inlet, and are used to collect pollen from the male flowers. The pollen is either collected for later freezing, or applied straight onto the females.

If the pollen is being applied at the same time as the collection only one hose is used for males, and four delivery hoses are used to deposit pollen on female flowers.

The claims for this machine are quite interesting. It is said to be a top-up pollination system to guarantee control over problems caused by wandering bees, inclement weather and poor male synchronization. On the other hand, it's said to be able to do the job all by itself - it's even called the super bee: "The pollinator is able to achieve levels of pollination similar to those achieved by bees in a season favourable to bee pollination".

So, how much does it cost? The machine is just over $7,500 including GST, and both the capital and labour costs are less than those for the alternative liquid spray pollination system.

Each machine can cover one hectare per day, and with three rounds needed during blossom time each machine can cope with four hectares of canopy.

The manufacturers use the figures of five year depreciation and 20% opportunity cost on capital. So the economics for each hectare look like this:

Labour (80-120 hours @ $6.30/hr)	$ 504- 756
Depreciation and interest	$ 551
Petrol and oil	$ 20
	$1,075-1,327

At $95 per hive, that's the cost of 11-14 extra hives per hectare. The manufacturers claim that the break-even production increase is 2,400 trays/ha more fruit.

The airflow pollinator is simpler, cheaper and easier to use than the liquid spray system. Like any artificial pollination system, though, it's only worth using if the yield increase is greater than the break-even point.

I think we may well see in the future an improved artificial pollination system that combines the strengths of both systems - quick suction collection, some cleaning, and accurate application of pollen in a liquid suspension.

Both artificial pollination systems have a temporary use for orchards with inadequate male distribution, poor male clone, excessive shade or competition from shelter, or substandard hives. All those problems can be fixed, either immediately or within a few years. The grower's decision is on which cure is the most cost-effective.

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Seen on a bumper sticker in the USA:

"Skydivers are good to the last drop."

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PHERMONES

The chemical world of the honey bee is a complicated one, with numerous odours being produced by workers and queens controlling a multitude of hive functions. The results of research into these odours or pheromones has revealed that workers produce a number of chemicals which control a few functions, while few queen-produced chemicals determine many functions.

For example, there are at least 16 worker-produced compounds, all of which are thought to be involved in only two functions - orientation and colony defence. The Nassanov gland in the abdomen produces seven compounds, each of which is necessary for the full orientation response to the hive entrance which fanning workers elicit. The sting and mandibular glands produce nine substances which elicit alarm and excite workers to defend their colonies. While the existence of multicomponent pheromones is not unusual in insects, the large number of worker compounds found in honey bees is remarkable, and perhaps suggests that many of these substances may in fact perform functions that we are not yet aware of.

In contrast, there are only two known queen pheromones, both produced in the mandibular glands. These have been implicated in a number of functions, including inhibition of queen rearing, prevention of worker egg laying, drone attraction for mating, worker attraction to swarms, swarm cluster stabilization, stimulation of Nassanov pheromone release and worker foraging, and queen recognition.

It is difficult to believe that these two compounds can accomplish all of this when only two functions can be attributed to the multitude of worker-produced substances. It is likely that queens produce many more compounds which act as pheromones, probably in extraordinarily low concentrations since they have evaded the most sophisticated modern chemical techniques. The future of research into these odours may be of great importance to beekeepers, since control of hive functioning may be manipulated by minute quantities of worker and queen-produced pheromones.

(By Mark Winston of Simon Fraser University, Canada)

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That's it from me. Have a merry Christmas and a good honey flow.

Andrew

Andrew Matheson

POLLINATION CALENDAR

MIR	FRI	FRI	FRI	THU	WED	TUE
8	7	6	5	4	3	2
16	14	13	12	11	10	9
23	22	21	20	19	18	17
32	29	28	27	26	25	24
39	38	37	36	35	34	33

1. This is a special calendar which has been developed for handling rush jobs. All pollination hives are wanted yesterday. With this calendar growers can order their bees on the 7th and have them delivered on the 3rd.

2. Everyone wants hives in by Friday, so there are three Fridays in every week.

3. There are eight new days at the end of the month for those end-of-the-month pollination deadlines.

4. There is no first of the month - so there can't be late delivery of end-of-the-month hives on the 1st.

5. A "Blue Monday" or "Monday Morning Hangover" can't happen, as all Mondays have been eliminated.

6. There are no bothersome non-productive Saturdays and Sundays.

7. With no 15th, 30th or 31st, no "time-off" is necessary for writing out invoices or paying bills.

8. "MIR DAY" - A Special day each week for performing miracles.

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