The New Zealand BeeKeeper

1986
Autumn

The New Zealand BeeKeeper

OFFICIAL PUBLICATION OF THE NATIONAL BEEKEEPERS' ASSOCIATION OF NEW ZEALAND INCORPORATED

CIRCULATION 1,450

To Members of The National Beekeepers' Association of NZ Inc who own more than 50 hives each and so are legally subject to the annual hive levy. THESE HIVE LEVY PAYERS OWN APPROXIMATELY 87% OF ALL BEEHIVES IN NEW ZEALAND.

To Beekeepers with less than 50 hives who subscribe to the journal at $15.00 a year (plus 37 cents GST for Dec. 1986) which also includes membership of the National Beekeepers' Association of NZ Inc.

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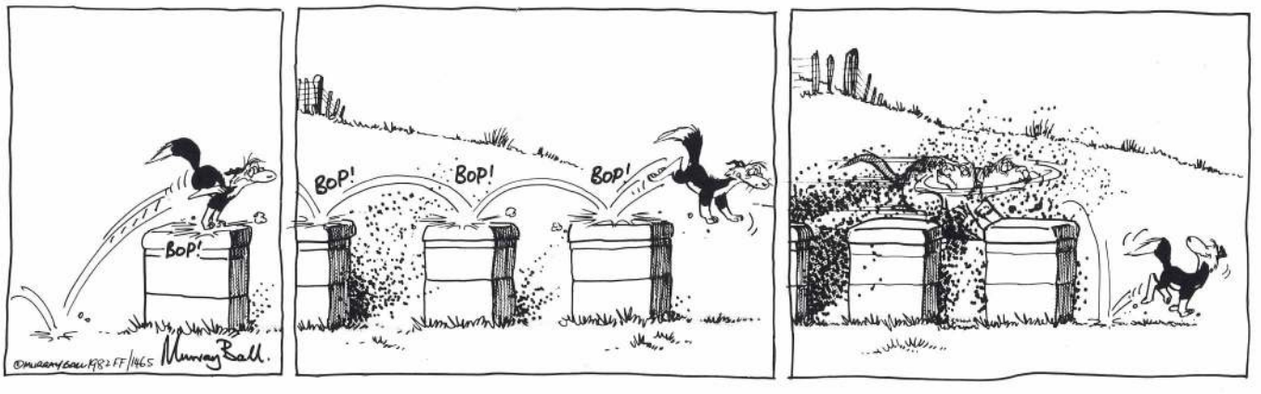
By Murray Ball



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To weed or not to weed — that is the question

Gorse is officially designated a weed, therefore the letter to The Editor in the Summer 1985 issue of The NZBK from the Canterbury Executive poses a question: Is New Zealand justified in still treating gorse as something nasty in the light of our current knowledge of how the ecology works?

The word "weed" in itself is innocuous. The Oxford English Dictionary defines it simply as "a herb growing in the wrong place". Which poses a subsequent question: What is the wrong place?

If a blade of grass grows is your onion patch naturally you remove it, however much sheep and cattle thrive on it. There it is a "weed", a "herb growing in the wrong place". Conversely, if an onion grows in the middle of a sheep paddock the pastoralist would be justified in "weeding" it. It is a matter of horses for courses.

However, seldom is life so clear cut. If a blade of grass and an onion both grow on a piece of rough public land, then which is a weed and which isn't? Are either weeds? Probably a moot point because few would become upset over either's growth. But if our old friend gorse dares raise his yellow tips, oh boy, does the screaming start! Pastoralists fear it may encroach on their land, put them to the trouble of "weeding" it; a regular maintenance chore any owner of employed land must perform anyway, just as you regularly hike blades of grass from your onion patch.

We might allow the pastoralist his point if gorse were useless. On the contrary, it is a most useful plant. It grows in poor soil, binding it and preventing erosion. It protects native seedlings when they most need it. It has no offensive smell, nor does it poison anything. It is also attractive, particularly if one considers the possible alternatives and, as far as beekeepers are concerned, it provides a valuable source of pollen.

But its most interesting attribute, seemingly ignored by those who insist it must be eradicated, is that gorse is merely a "stage" plant. Left alone to protect the native seedlings beneath it, it will in turn be destroyed by those native plants as they grow up.

We must also consider the side effects of any means to eradicate gorse. To kill gorse a spray must be toxic. If it is toxic to gorse then it may be toxic to other plants. If we use, for example, an introduced insect, then what else might than insect destroy? We have seen other such proposals in the past; such as the one to introduce the American mountain lion to deal with the then deer pest!

It has been argued that gorse is not a native species, was introduced by some early settler who did not understand what he was about. But surely that settler was merely an extension of the natural process? Is there much difference between seeds spread by wind, birds, animals, or water, and a little man climbing off a boat?

And the fact that gorse took over so much and so easily might be construed as an ecological kick in the teeth. It would have had little chance if the man who screams the loudest had not raped our native flora with fire and axe.

However, that is all "might have been". We do have large tracks of grass where once grew bush, although this should not be allowed to detract from the point. If gorse becomes a "weed" on private property, then it is a matter for the owner of that property. To weed or not to weed is his prerogative. But it is not his prerogative to tell you what you may or may not grow on your land, or what may grow on public land, although for many years pastoralists have convinced successive Governments that they indeed have that right. Perhaps in the days when our economy rode solely on the back of the sheep — and the British housewife's taste for mutton — the pastoralist had a strong case. However, today, when the sheep is becoming nationally of less importance, when its earnings are being replaced by those of other products, and land intensively cultivated by horticulturists is less attractive to gorse, then the importance of the pastoralists' case surely weakens.

It is time our Government realised this, that frequently gorse is not "a herb in the wrong place", but that it is a most valuable one and frequently very much in the right place.

Michael Burgess

GOODS AND SERVICES TAX

The Goods and Services Tax Bill received the Royal Assent on 3 December 1985.

Our legal advisers inform us that any annual payment which spans the introduction of the tax during the 1985/86 year must be taxed for the period from 1 October 1986 to 31 December 1986.

Therefore, GST for 1985/86 year is payable on that part of the levy which relates to services supplied after 1 October 1986, that is, on one quarter of the annual levy.

Annual magazine subscriptions and annual rates payments which also span the introduction of the tax during the 1985/86 year must include a provision for the tax payment for the period from 1 October 1986 to 31 December 1986.

Therefore, they conclude:

"1 Your Declaration should include a requirement for an additional payment of 2.5% of the levy fee for the purposes of the tax.

2 Your notices for ordinary membership subscriptions should be similarly amended to include tax at 2.5% of the fee, that is 37c".

LETTERS

Expert assistance offered

Dear Sir

The New Zealand Agricultural Engineering Institute (NZAEI) is a group of experienced professional engineers and technicians located at centres in Hamilton and Lincoln. We specialise in all aspects of agricultural and horticultural engineering, and offer a blend of technical expertise, engineering skills, and practical agriculture that embraces farm machinery and structures, irrigation, drainage, soil and water conservation, services, extension and information.

We have carried out project developments in all mainstream activities of New Zealand agriculture and horticulture. For example, for horticulture these have included mechanical harvesting of raspberries, apples and kiwifruit. Sprayers have been developed that match the profile of artificial support structures that were also developed initially by our group. Artificial shelter and protection from frost have been researched. Trickle irrigation was introduced.

Extensive and well-equiped workshops and laboratories enable us to develop and evaluate ideas from conception through to prototype or application. Electronic and computing facilities speed and enhance design, manufacture, and information retrieval.

Engineering problems that occur in beekeeping may be given limited priority when compared to those of a non-engineering nature. Beekeepers complain of hive destruction from spray toxity; kiwifruit growers seek to attract more bees to unattractive flowers to overcome pollination shortfalls, and maintaining disease-free hives is a perennial concern.

Improving the ease and logistics of handling large numbers of hives or honey frames mechanically; of improving separation of honey and wax from frames, and of collecting and treating honey are areas that may benefit from an engineering scrutiny. We'd be pleased to consider a role. As the country's leading centre for professional advice in agricultural engineering we clearly have a wealth of expertise on hand, some of which may be of value. Unfortunately, we've rarely been at the sharp end of your industry, and we are not always fully aware of your current problem centres.

Information arising from our work is made available through specialised or general extension journals, or press releases. In most cases reports or notes are prepared describing each project, results and value to the community. When required this information will be confidential to a client. In reality we're as close as your nearest telephone.

At the NZAEI our business is helping people. If we are unable to handle your particular problems we may know who can. Call us at Christchurch (03) 252 811.

Peter Steele
Nassar Kaviani

Position wanted

Dear Sir,

I am requiring information about addresses of honey farmers. After a two year apprenticeship in a big honey farm with 400 beehives, I successfully accomplished my exam at 'Landesversuchsanstalt' for beefarmers in Mayen. After this I went to the 'Fachhochschule - Landwirtschaft' in Bad Kreuznach. Now I want to work in other lands to further my knowledge about the beekeeping business. I want to build my own beekeeping business here in Germany, so I would like to work in your land.

I would be most appreciative for any answers.

Thomas Korsten
Layenstr. 1
5531 Neroth
W. Germany

Help

Dear Sir,

My wife and I have just finished a 14-day tour of both your Islands. It was go, go, all the time. The main problem, we would start early and finish the day late, making it impossible to telephone anyone during working hours.

This is a lead up to the point. We have seen a bee, just the one at a time, in many places. No one can tell us just what sort of a bee it is. About 90 percent of all people met were Americans, and their knowledge would be limited anyhow.

The Bee in question appears to be about two centimetres long and about one centimetre wide, could be a little larger. Owing to the wet weather in the South Island it was impossible to get near enough to photograph it.

Having many relatives in the past who were in the honey business, I am most interested to know all the details plus the hope of a picture of the creature. Hoping you can fulfil my hopes.

R.B. Emmett
P.O. Box 69,
Baulkham Hills, 2153
N.S.W. Australia

Ex. Secretary's comment: We are not sure whether to call in the Pink Panther, Hercule Poirot, or even Miss Marples. Maybe even M15 or the KGB, but can anyone identify this Bee?

To market to market —

By Reg Clarke

"To market, to market, to buy a fat pig" — so runs an old nursery rhyme, and conjures up a vision of the bustling livestock-market scene we are all familiar with. In essence, a public place where buyer and seller are brought together, and the interplay of market forces determines the price.

In modern commerce such markets take many forms. It may be an annual auction like the Trentham Yearling Sale, or as widely disseminated as the second-hand car market. It can be international like the bullion market, an institution like the Stock Market, or an efficient auction system like the New Zealand Wool Market. The essential common feature is the public aspect, which makes possible the flow of public information on sales, prices, trends, and forecasts that in turn influence buyers and sellers and so enables the forces of supply, demand, and finance to create a responsive market. There is, of course, nothing that can in this sense be called a "honey market", and that is I believe the major weakness of our Industry.

Lack of sound market structure reinforces other factors, all tending to create a buyers' market, with the depressed prices we are all familiar with. Hive numbers are still increasing and now virtually guarantee production well above the static domestic demand level. Only a season of "nuclear winter" severity could leave a domestic market shortfall now. Buyers for the supermarket chains now dominate the domestic trade and can drive a hard bargain with the few major packers capable of meeting their requirements. In theory, the price to the producer should bottom out at the bulk export commodity price, which is also subject to its own downwards pressures. But as we saw last year, it can fall below that level to fuel a domestic price war.

There are good grounds for worrying about the consequences of honey being imported to an under-supplied domestic market. But consider for a moment the effect on prices. A 10 percent to 20 percent shortfall would barely be noticed by consumer or supermarket, but competition among buyers would move prices up to the cost of imported honey **delivered to the packer's premises.** As we see with other imported goods, the many costs involved can inflate prices considerably.

Producers are rightly angry with a situation that ties their income to that of a Mexican or Chinese peasant beekeeper, whilst absorbing like our farmer friends the inflated costs of a still largely protected economy. But we have very few options. We can work harder and more efficiently so that a low price is still adequate, or diversify into other bee products and services. We can get out of the industry, or reduce hive numbers to bring production back into line with domestic demand. And we can strengthen our marketing.

What do I mean by a strong market? Firstly the seller must be convinced of the high quality and value of his product. He needs to be well informed about demand, stock levels, and prices. He needs the confidence and financial strength to withhold honey from a depressed market. he needs access to a wide selection of buyers who are forced to compete with each other for supplies. Exporters and overseas buyers should have easy and direct access to producers. Also, the market should respond quickly to changing conditions and currency exchange values.

Our present system serves these needs very poorly, and should be improved. We have the huge advantage of a non-perishable product, yet we unload it on the market as if it would go rotten in a week. We have a strong and well-directed Beekeepers' Association, yet we have failed to use it so as to fully serve our marketing needs. We must, above all, cease the practice of private — even secret — trading, conducted like certain other activities between consenting adults in private. This stifles the flow of market information. We must get that information flowing in a swift and timely way throughout the Industry via our own channels and the public news media. This includes advertisements, sale reports, expert analysis of prices and market trends, assessment of crop forecasts, and of traders' stock levels. And, since export returns dominate our market, we must be equally well informed about the world honey commodity market.

The first essential step along that road would be to establish a NZ Honey Market, selling by sample offered at auction, with sales at regular intervals at some central location. I see it functioning rather like the Wool Market. Exactly how such a market should be structured I leave for some other occasion and for those with expert knowledge. But I believe very strongly that it could be made to serve our needs well if only we producers can work together to create and support the concept. For good reasons we dismantled the old HMA-based market, but we failed to put an effective free and open market structure in its place. It is not yet too late.

The effects of inbreeding on brood viability and the honey crop

By Andrew Matheson A.A.O.

When queen bees are too closely bred to drones in a honey bee stock, colonies headed by those queens display a "spotty" characteristic in their brood. This spottiness results because a certain percentage of eggs laid are not viable, and will not develop into worker brood. Nurse bees remove these larvae soon after hatching, and the empty cells must await another visit from the queen.

How does this process take place? The sex of a honey bee is determined by more than just whether the egg is fertilised. What is also important is a single gene called the sex gene.

Genes are incorporated in long strands in each cell called chromosomes, and chromosomes are arranged in sets that consist of one of each kind of chromosome. The sex gene is found on a particular part of just one chromosome in the set. In a population of honey bees several different forms (called alleles) of the sex gene can be found.

Because female honey bees (workers and queens) have come from fertilized eggs, they have two complete sets of chromosomes. They thus have two sex genes, one in each chromosome set, and are termed diploid.

Normal drones (males) develop from the unfertilized egg of a queen and thus can only have one set of chromosomes and one sex gene. They are said to be haploid (or monoploid).

However, for a honey bee to be female (diploid) more is needed than just a fertilized egg. A diploid individual must have two different forms of the sex gene (one on each set of chromosomes). Individuals having the same form of the sex gene on both sets of chromosomes develop into abnormal diploid males which are effectively inviable, since workers detect and con-

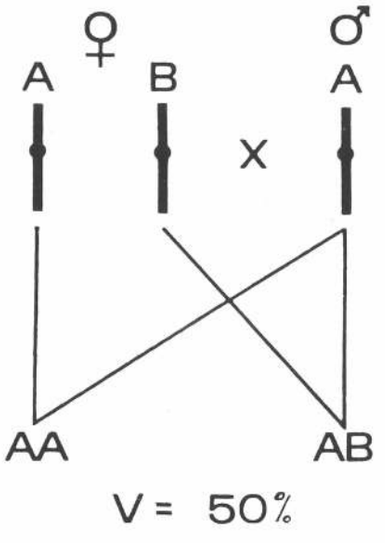


Fig One

Inbreeding (cont.)

sume them shortly after they hatch from the egg.

How common these diploid drones are depends on how many different forms (alleles) of the sex gene are present in the population. Honey bee populations have between six and 19 sex alleles. The number of different sex alleles found in a breeding population is affected by the size of the breeding population, and by the rate of introduction of new alleles into the population, usually from new breeding individuals (outcrossing).

The simplest case (figure 1) shows a queen with sex alleles A and B mated to a single male with a type A sex allele. Half of the queen's egs contain the type A allele and half the type B. As all the sperm have type A, 50% of the diploid offspring will be AB (female), and 50% will be AA (diploid drone, non-viable). Thus the overall brood viability is 50%.

Figure 2 shows what happens when the queen mates with one drone which has a sex allele of a type different from both of hers: all offspring have two different sex alleles and can develop normally. The viability is 100%.

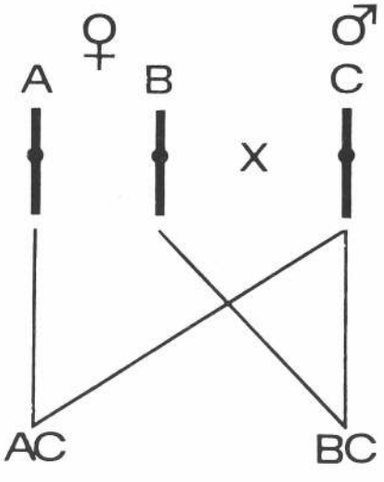


Fig. Two

Of course a queen doesn't normally mate with only one drone. If the drones with which she mates have a range of different sex alleles the chance of inbreeding is correspondingly reduced. Figure 3 shows a queen mating with two drones : one with a sex allele the same as one of hers (B) and one different (C). Assuming the queen used the sperm of each male equally, 25% of the offspring are diploid drones (BB). The brood viability is 75%.

With more matings the picture becomes more complex. The brood viability of a colony depends on the number and frequency of sex alleles in the

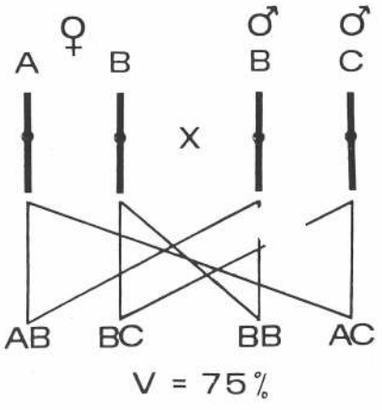


Fig. Three

drone population available to mate with the queen, and the number of times the queen has mated.

The first of these two factors can be controlled to some extent by the beekeeper. It is important not to use just one or two breeder queens over a long period (2—3 years). When second-generation queens are mated in out-apiaries, there is quite a high probability of their mating with drones produced by queens reared from the same breeder queen. As these drones must have one of the same sex alleles as their mothers, there is more chance of diploid drones being produced.

Increased inbreeding leads to lower brood viability, and Dr J. Woyke of Poland has produced evidence that inbreeding has a marked affect on honey production. Woyke and his associates conducted detailed studies of both brood production and hive population in colonies headed by queens with 0, 25% and 50% inbreeding. An analysis of weight gain during the honey flow and colony surplus was also made.

The results showed that even in colonies with 25% inbreeding, almost one-fifth of the total honey crop was lost, while colonies with 50% inbreeding produced less than one-third of the normal yield. The honey production also displayed an interesting seasonal variation, with 25%-inbred colonies falling off sharply in autumn flows, while 50%-inbred colonies did poorly throughout.

REFERENCES

Page, R.E.; Laidlaw, H.H. 1984. Closed population honey bee breeding. *Bee World* 66(2): 63—72.

Woyke, J. 1980. Effect of sex allele homo-heterozygosity on honey bee population and honey production. *Journal of Apicultural Research* 19(1): 51—63.

Beekeepers' Code of Ethics

The Bay of Plenty Branch's code of ethics was circulated to all branches seeking their comments. Five branches replied. In the light of these replies we have ammended our code accordingly.

1. We, as beekeepers, should respect the prior territorial rights of existing apiaries unless the said apiary has been left vacant for a period of 12 months or more.
2. Any grouping of 10 or more hives shall be deemed an apiary for the purpose of this code.
3. The territorial right of any apiary shall be a distance, in radius, of 1.5km in every direction from that apiary, and no new yard shall be located any closer than that, except when hives are on hire for pollination.
4. We should make every endeavour to have all our existing apiary sites plotted accurately on the MAF apiary map, where applicable.
5. We will ensure that every apiary is clearly marked with our official identification mark as issued by the MAF.
6. In the event of any territorial or other dispute where agreement cannot be reached, we will call on advice from a mutually acceptable mediator from within the industry.

Gavin White
Executive member.

Natural regulation of gorse — costs to beekeepers

By Dr Ron Sandrey

Introducing gorse mites and other insects in New Zealand to control gorse (Ulex europaeus) is an emotive issue with beekeepers because the gorse flowers are a valuable source of pollen, but to both foresters and farmers the plant is a major weed. Gorse is also used to shelter and contain stock, as feed for goats, as a nursery plant for native forests, and for controlling erosion.

Economists believe introducing insects to attack gorse worthwhile if benefits will outweigh the costs. DSIR commissioned a study to look at these benefits and costs. All beekeepers with 250 or more hives were surveyed to find how valuable gorse is to them, and the likely impact of control by insects.

Slightly more than half the beekeepers saw gorse as the major pollen plant in spring and autumn. Most said that over half their hives gathered some gorse pollen during the spring, with almost half the beekeepers saying that more than 50 percent of their hives gathered gorse pollen only at some time during spring. Two out of three beekeepers expressed concern about shortage of spring pollen, but only one out of three was concerned about a shortage of pollen in autumn.

Tauranga kiwifruit beekeepers were more concerned about the shortage of pollen in spring, but Christchurch honeydew beekeepers were concerned about shortages in autumn. Half the beekeepers said pollen subsitutes or supplements would make their hives perform better, but less than one in 10 said they were feeding pollen subsitutes or supplements because not enough natural pollen was available. Many said substitutes and supplements were too expensive.

There is still uncertainty about whether insects to attack gorse will establish in this country, and about the effects on gorse and gorse flowers should these insects establish. Beekeepers were asked about the possible impact of reducing gorse flowers by 10 percent, 25 percent and 50 percent. Half said they would need to feed pollen if gorse flowers were reduced by 50 percent.

Beekeepers were asked to estimate the cost of reducing the number of gorse flowers. The few who answered estimated an average cost per hive of $5.24 if flowers were reduced by 10 percent, $5.10 for 25 percent, and $7.93 for 50 percent. Taking these estimates as representative, and weighting these by the percentages of beekeepers answering "yes" compared with those who answered "no" to the need to feed pollen question, estimates of $417,000, $704,800, and $1.6 million were calculated as the cost to New Zealand beekeepers.

An alternative approach was costing artificial pollen supplementary feeding. A spring feeding of 6-8 weeks at $8 per hive was used. This cost was weighted by the percentages of hives needing to be fed. Total cost of $637,800, $1,105,500 and $1,573,300 were estimated. Comparing the two approaches showed similar results, especially with a 50 percent reduction in gorse flowers.

Potential benefits to farmers and foresters from reducing gorse vigour by 10 percent, 25 percent and 50 percent were calculated. The potential benefits would outweigh direct costs to beekeepers by ratios of 1.2 to 1, 5 to 1 and 12 to 1.

So long as all reasonable steps are taken to ensure the insects are host-specific, introducing biological agents to control gorse is economically efficient. Those who gain could possibly compensate those who lose and still be better off. Further decisions become political, not economical.

One of the intentions of the study was to look at potential costs from loss of pollination should beekeeping be severely affected. As clearly demonstrated with kiwifruit in the Bay of Plenty region, the market system can and does overcome any problems of pollination. Producers will pay pollination fees if they are faced with costs from loss of pollination services.

Other users of gorse are recognised and discussed in the study, but beekeepers are those most affected. Limitations of the study are recognised, and these are documented to help with any further discussion on introducing insects to control gorse. My thanks to the beekeepers of New Zealand. I trust the results of the survey and the study in general can be of use to them.

Reference

Sandrey, R.A. "Biological Control of Gorse: an ex-ante Evaluation" Agricultural Economics Research Unit, Research Report No. 172, Nov 1985, Lincoln College.

The Hawke's Bay earthquake: its effect on an apiary

This story, originally published by the NZ Smallholder, 16 March 1931, and written by the late W.J.C. Ashcroft, has been sent to us by his son, Mr Paul Ashcroft.

On the morning of that fateful Tuesday, February 3, all appeared peaceful in a certain Hawke's Bay Apiary. Each hive sent out a steady stream of foragers into the bright sunshine, while the incoming workers, laden with nectar, dropped heavily on the alighting boards. Over all rose the deep rich hum of contented labour; for while the honey flow was drawing to a close there was still enough nectar to spare and consequently no robbing.

Then, like a bolt from the blue, the shocks came. A hive supered up for honey is not the most stable structure, and when most brick and ferroconcrete structures were hurled down in Hastings and Napier, it is easy to picture what happened in this Apiary. One moment orderly rows of hives, the next a jumbled mass of boxes and combs.

In the deathly silence that followed the 'quake the bees could be distinctly heard — a low hum of distress and bewilderment. But soon every bee became conscious of a fascinating odour — the reek of honey from the smashed combs lying in the hot sun. Robbing commenced. The deep rich note of labour was replaced by the angry hubbub of war. Each hive — body of bees became a garison cut off from the main body, with its defences broken down but fighting with the fury of despair. Single combs lay about black with bees fighting in mortal combat, while company fought company for possession of the supers which remained intact. The fighting spirit of the easily-handled Italian bee was here apparent, for they came out boldly to do battle with the invaders, while the craven black bees cowered well within shelter. The air for a few hundred yards around was becoming distinctly unhealthy, and there was the prospect of traffic being held up on the nearby road. Something had to be done. The hives faced north and generally went over on the west side. Some went over in a block, separating when they hit the ground. These were easy to re-erect but some appeared to have been tossed in all directions by a vertical lift. One brood box would be at the side, another in front, and the supers on top of the next hive. Some boxes would be on their sides, others the right way up, while most were upside down. Combs had often been thrown clear of the boxes and lay in ruins on the grass. Several nuclei hives were intact but standing on their lids. A stampede of wild cattle through the apiary could not have caused greater confusion. It is not surprising that during re-erection, supers and even brood boxes were mixed.

The sight of all those made the beekeeper don veil and gloves, wishing both were less "holey". Earthquakes not being dealt with in beekeeping textbooks, or at field days, each man had to invent methods of dealing with the situation. Rightly or wrongly this beekeeper armed himself with a smoker and a watering can. First watering the bees he finished up with a vigorous smoking, but the effect seemed negligible. Lifting each super could only be compared with touching off a bomb, and those bees quickly found the holes in veil and gloves. It is really surprising the amount of sting-poison the human system can stand, but the sufferer breathed a sign of relief when the unpleasant job was finished.

The damage was not as great as in other apiaries in Hawke's Bay, where the hives were knocked down several times by succeeding shakes. Many combs were broken, roofs and boxes were damaged, and much honey was spilt in the honey house when tins were upset and thrown down. The damage through lost queens cannot be ascertained yet, and there is the grave danger of disease picked up from some unregistered hive, upset by the 'quake, and left open to be robbed out.

From the colonies

WAIKATO

Most of the Waikato beekeepers have a reasonably good crop varying from three to four tonnes a hundred.

Clover poured in and we would have had a real boomer of a year had the fine weather continued. The crop was produced up to January 1, but then the weather changed to very high humidity and persistent rain. One fall of rain, over 100mm, virtually washed the clover flowers away.

About January 10, the weather improved and clover flowers have since reappeared but persistent cold fronts have spoilt any nectar flows. I don't remember ever seeing huge clusters of bees hanging on the front of the hives for days on end with nothing to do.

A large number of hives have changed hands in the Waikato and a lot of queen-rearing and hive-splitting is being done to produce package bees for export.

Pollination hives came off the kiwifruit in poor condition and have not produced a super of honey as they did last year.

Nodding thistle is producing well in some areas but in other areas is badly affected by weevil. One of the areas producing well was flattened by an easterly storm and the sheep ate all the flowers. How about that?

Honey sales are slow in the shops and prices are still low. Some large containers are being exported and $1.80 and $1.85 are prices I have heard for clover honey per kilo! An improvement but we should be getting more like $2.00 with the rise in costs of production.

Ray Robinson

WESTLAND

Our favourable winter and spring weather continued and merged into early summer with very warm, fine weather, bringing an early heavy flow. The inevitable last minute rush to get supered up, and the promise of a good crop, saw most beekeepers working overtime.

By this time we were eyeing the weather with disbelief. By the end of November we had received only two-thirds of our average rainfall, and the bees were in full flight. Understandably, as we proceeded into December with continuing hot, fine days, and the bees "pushing at the seams", most of us were hard-pressed pulling honey and getting the wet boxes back on. By the end of the second week of December still no rain and the hope of another two to three weeks of settled weather looked possible, which would have taken us to the end of the Kamahi flow.

But in North Westland a third of our annual rainfall is about 600 millimetres and that's just too much to go without. So, during the third week of December dark clouds moved in, rather unexpectedly, from the north. It's not often we get northerly weather, but we've sure had it this summer . . . warm and humid with some heavy falls of rain. The flow was subsequently cut short and, although we've had our fine spells since, it has remained a "no flow" situation, resulting in a below-average crop on the Coast again this year.

We have just learned of one exception. Our Branch President and Secretary, having built a new honey house which came into use this year, have produced a daughter, their first child. Our congratulations to Lindsay and Daphne Feary. Those who attended Conference will surely remember them.

Sandy Richardson.

HAWKES BAY

With December turning on the heat for us, HB looks like reaping an average to good crop this year. A few remote high-country yards had a slow start but they are expected to catch up later.

Apart from this our main news is of the HB pollination group. We have adopted rules similar to those of the Northland Association and have drawn up pollination contracts to cover pip and stone fruit as well as kiwifruit.

Our last meeting felt that HB did not need a pollination group, but Ted Roberts, our AAO quickly pointed out the advantages of one. At the end the meeting decided to form one immediately.

One of the main objectives of the group is to provide minimum standards for pollination hives and to ensure that these standards are maintained by members.

See you in the winter.

John Walker

From the colonies (cont.)

OTAGO

The Otago Branch covers a fair area with a diversity of soils, climates, and bee pastures. So no wonder that we see a difference in the honey crops gathered by the beekeepers in our province. Some areas are still very dry while in other places good rain over a few days, or local thunder showers, improved conditions. January did not give us a record number of sunshine hours, but soil temperatures have been above average.

Fellow beekeepers from Central report an expected crop about average or below average, West Otago expects a satisfactory one, and here in South Otago we are happy with a good crop, probably above four tonnes per 100 hives. So it is pleasing to know that those accumulated losses may disappear from the balance sheet, deferred maintenance will be done, and this time there could even be enough left over for new wallpaper and a pair of new boots for Ken.

Some members of our Branch attended the Southland field day. Brilliant weather, a wonderful setting at Five Rivers, and an interesting programme. Much appreciated.

Honey buyers for the export market were present in force. The prices offered at present (for how long?) are not too bad. So we all agree how foolish anyone would be selling cheap on the local market.

John Heinman

SOUTH AUCKLAND

It is with great regret that I have to report the death of one of this Branch's oldest beekeepers, Ivan Pullin. Well known to many beekeepers he kept bees for the past 60 years. Our sympathy goes to his family.

The honey flow started early and the bees were really bringing in the nectar when, in early January, the weather changed to high winds and rain for a week.

What should have been a boomer of a season has now fizzled out with the bees spending a lot of time around the hive entrances. If there is no hot weather in February the honey flow is already over.

Dave Young

POVERTY BAY

Overall the honey crop for Poverty Bay is well above average — good news for a change.

Kiwifruit pollination went well except for an irresponsible orchardist who sprayed citrus trees close to a kiwifruit block and killed many bees.

Now it is simply a matter of harvesting, extracting, packing honey and thinking about a few autumn diversions.

Peter Lamb

NELSON

If the weekend of January 24-26 is any omen for 1986 we're in for a few jerks and bumps. Most of us, as planned, were high and dry at the Rotoiti Lodge in the good company of many an old friend and faithful from the West Coast, Blenheim, and Wellington. We talked, we quizzed, and diligently compiled notes from several short but concise lectures delivered by experts in their field. Topics like: "The Occupational Hazard of Spinal Injury", and "How to Keep Pressure and Tension in Perspective", plus the old chestnut: "You extract money from honey by filling the hives not by emptying the extractor". At least, that's how Jasper Bray's mind works!

Meanwhile, while the mm's of rain piled up there were some tense moments for those whose hives might be jeopardised by floods. Sad to say there were casualties and the mudflat version of hive manipulation was back in gear. Its time someone wrote a book entitled: "Migratory Beekeeping on Flat-bottomed Barges". How about it, AAOs?

Seriously, that weekend promoted a strong feeling of togetherness and a positive attitude for the next time.

I would rather sidetrack forecasting the honey crop this time. Why? There's one hell of a lot more of 1986 to come yet.

Fred Galea

SOUTH CANTERBURY

The old adage "A good willow flow, a poor honey crop" proved itself once again. As I wrote these notes, rain suggested the possible breaking of the severe drought. Ample rain did fall but somehow it forgot to stop. We began to wonder would we ever have a summer!

Grass growth was dramatic, completely overgrowing and surpassing clover growth, already hard hit by the lengthy droughts. The clover had no chance, and its flowering was one of the poorest I can remember in recent years.

At a time when we all thought we were finished with feeding, panic staions! Suddenly hives became short of stores. Indeed many hives did suffer varying degrees of starvation. And so time passed and we gathered no honey of any consequence.

By the end of January, when our honey crop should have been gathered, we thought all lost except for the high country and the plains where average crops were gathered.

A very good spell of weather early in February brought some honey, but most went into the brood nest.

From the colonies (cont.)

And so another season passes. Overall a very poor season on the downlands, fair on the plains, and average in the high country. What honey we have is very dark, some as high as 60—70 percent colour, but it is honey.

The switch from sheep to barley and other grain crops is having a pronounced effect by reducing pasture. If this trend continues I'm sure hive density in some areas must be reduced otherwise we cannot expect economic returns. Where too many, these hives will pose a problem because there has already been a substantial increase in hive numbers in the last few years, plus aggressive competition for available sites, especially in the high country.

What the future holds I am not sure but one thing is certain. That is, we always live in hope the next season will be the one, a bumper.

Harry Cloake

MARLBOROUGH

We began to wonder when the warm, sunny days were to begin. After a good spring build-up to the end of October, the cold, wet November saw hives in some areas close to starving and declining in strength. After New Year the warmth came at last and kept the bees very busy in the later areas. The hives in the early country have in the main missed out on much of a crop. A recent rain will help extend the flow a little longer.

An eventful weekend at Lake Rotoiti, hosted by the Nelson beekeepers, saw topics like queen rearing, GST, backs, beestings, marketing, and the usual chatting among beekeepers from Wellington, West Coast, Marlborough and Nelson.

Crop harvesting is now getting underway. Extraction time yet once again.

James Jenkins

BAY OF PLENTY

The season started well with the best spring ever, then something went haywire.

Bees went into kiwifruit 10 days later than normal and the flowers came out in patches, strung out over a long period which made it very late, almost Christmas, before we were clear of the orchards.

Persistent rain since November has put paid to any chance of a honey crop.

It seems that honey supers put on hives after kiwifruit pollination were simply an exercise in wax moth control. Little or no honey was collected from bush or pasture.

The Branch is currently without a President, and the year was almost gone without any Branch activity at all.

The KPA for hives in orchards is settling down into a good, responsible controlling body.

The Committee is meeting soon for a look at the results of its efforts over the past season and will no doubt come up with some recommendations for the coming season.

I feel that too many beekeepers do not bother to keep up with the necessary book work. That can jeopardise the whole pollination industry.

Jim Courtney

SOUTH-WESTERN DISTRICTS

If the New Zealand average crop is 27 kg of honey or one full depth super per hive, then our western coastline yielded above average at 40—50kg per hive. The drier, warmer soils yielded early and most of the crop came in December.

Kiwifruit orchards flowered late by seven to ten days which meant pollination hives were not returned to their permanent sites until mid-December. By then I found that weaker hives left behind on their permanent sites had already filled one box.

This year's experience show that pollination fees of $60.00 plus are fully justified when honey yields are penalised like this. However, pollination income is more certain than the honey crop which has been very patchy around our district.

Some kiwifruit orchards had pollination problems because so much clover was about. Bees were hedge-hopping to feast on the abundant clover. Fresh hives had to be brought into those orchards. Below average crops came from the heavier, wetter, and colder soils of inland parts of Central Taranaki and Northern Manawatu. This despite the prolific carpet of clover and other field flowers stimulated by frequent rains. Bush and manuka crops were also disappointing.

It is good to have at least three exporters inquiring for honey to satisfy their export orders.

John Brandon

NORTHLAND

Very little has happened in the North since December except rain. . .

It would have to be one of the wettest summers on record. Manuka crop was poor and the clover was getting off to a good start with all the paddocks just white - but no such luck — down came the rain and we have had only a few fine days in between. Three floods in three weeks. So all in all production is well below average.

The Branch is planning another 'get-away-from it all' weekend possibly at Haruru Falls in the Bay of Islands in May. Anyone interested please contact Secretary for details.

Pat Gavin

LIBRARY NOTES

Only two IBRA reprints to note in your catalogue this time: M 115 — *Occurrence and Distribution of Chalk Brood Disease of Honey Bees*, by L.A.F. Heath, 1985, 7p., UK; M116 — *Acarapis Woodi: A Modern Appraisal*, by L. Bailey, 1985, 6p, UK.

For students of beekeeping courses who find it difficult to go to the extra expense of purchasing a reference book the library hopes shortly to have available two recent copies of the *Hive and the Honey Bee*. It is still recommended that each student has his/her own copy but if there is a need for assistance we will be able to help out.

John Heineman
Hon. Librarian

Taking honey from the hives

By Skep

By the time you read this, what honey flows you have had for the year will probably be finished. If you are one of those lucky enough to have a surplus of honey to take off your hives, now is the time to think about doing it.

My last article dealing with supering up your hives mentioned that you can save on equipment costs by extracting supers as they are filled and then replacing them to let the bees work on them a second time. If you have done this, you will already have dealt with the subject of this month's column: Taking boxes of honey off the hive.

I'm going to outline several methods of removing boxes from the hives because I think it is important to know your options. I'll try to indicate when I am drawing on personal prejudice.

The ability to remove full frames of honey from the hive, extract them, and then replace the empty frames is (along with disease control) one of the greatest advantages of the moveable-frame hives that we use. Beekeepers have come up with all sorts of schemes and gadgets to help them to get the bees out of the boxes. This column will deal with four methods: shaking and brushing, fume boards, bee escapes, and blowers.

Shaking and brushing the bees from the full frames is not as difficult as it would first seem. Every beekeeper should learn how to shake bees in such a manner that they do not get too irate. This ability is one of the 'building blocks', the necessary skills of the proficient beekeeper.

Hold the frame by its lugs between thumbs and middle fingers. Lift it rapidly 50-100mm, then without hesitation push sharply downward, catching it with the middle fingers. This upward movement, followed immediately by the downward 'jolt' seems to catch the bees by surprise and dislodge them from the frame. If you have done it properly, there should be few bees remaining.

If you want to remove a honey crop by this time-honoured method, it pays to be prepared with some other equipment. Take a couple of empty boxes along with you in which to place the frames as you clear them of bees. Use inner covers to keep the honey covered at all times.

Especially if you are taking your honey off toward the end of the season, robbing can be a real problem. By keeping the inner cover on the hive except when you are actually working it, and by avoiding exposing honey combs, you minimise the chances of its starting.

To remove the last few bees from the frame, you can use either a soft bristled brush or a handful of grass. The bee brushes sold by the equipmnt suppliers are ideal, though you may be able to find a similar brush in the hardware store, such as the type used for wallpapering. I like to keep a tin of water handy as well. After brushing several frames, the bristles of these brushes clog up with honey and become difficult to use properly.

There are three major advantages to taking honey by the shaking and brushing method.

1. It takes little in the way of equipment.
2. It takes little pre-planning and so can be done with no previous hive preparation.
3. Because frames are handled individually, you need never lift a full box of honey unless you so choose.

Fume boards are another story entirely, and I'll limit my description of them to their bad points. These disadvantages to me far outweigh their good points.

A fume board is basically just a telescoping lid with an absorbant pad fitted on its inner surface. One of several chemicals are sprinkled on this pad. When the board is placed on the hive, the heat of the sun begins to vapourise the chemical and the smell sinks down through the hive. Because the smell is a repellent one (to me as well as to the bees!), the bees move down through the hive, leaving the honey supers.

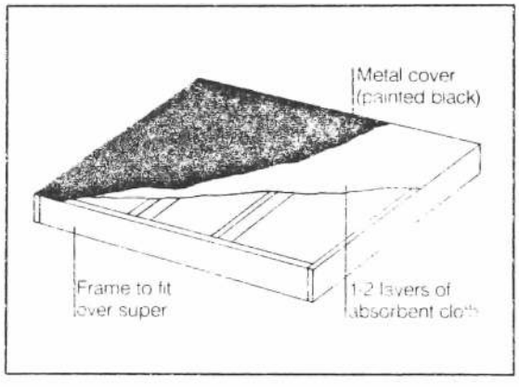


Figure 1: Fume board

Though it seems like a fine system, and some beekeepers work it with great success, I have never liked it much. The chemicals used can be toxic as well as bad smelling. If there is not enough heat to vapourise the chemical, the boards are ineffective. A final danger comes with possible tainting of the honey from the odour of the repellent chemical. I've mentioned fume boards here for the sake of information, but as you can tell, I am not one of their major backers!

For most hobbyist beekeepers I highly recommend the use of the **bee escape board** for taking off honey. Though they might have disadvantages for a commercial beekeeper, they suit the style of most hobbyist beekeepers down to a 'B'.

The escape board is inserted into the hive below the boxes of honey that are to be removed. It acts as a 'one way gate', allowing bees to move down through it, but not letting them back up into the supers. As soon as all, or most all, the bees have moved down through the escape board, the boxes of honey, now empty of bees, can be lifted from the hive.

For elegance of construction in the field of beekeeping gadgetry some of the designs of bee escapes are hard to beat. I'll only describe two of the most common, as they are all equally effective.

The Porter bee escape is probably the oldest and most commonly used. This device causes the bees moving down through the escape to push through two spring wires. After passing through, the bees are unable to return. Each of the escapes has two exits. Most beekeepers when constructing escape boards mount two of the escapes in each, giving a total of four exits down into the hive. This may speed the movement of bees down through the board, but more importantly it gives a bit of insurance should one escape get blocked. This can easily happen with either a drone getting

→

Taking Honey (cont.)

stuck or the bees waxing or glueing up the fine wires.

I prefer the designs of escapes with no moving parts. They all seem to work on the same basic principle: bees can easily be channelled through a funnel, but they find it very difficult to come back in through the small end.

Before waxing eloquent on the use of bee escape boards, I'll admit they have some drawbacks. They do require some planning ahead. You won't be able to just suddenly decide that now is the time to take off your honey. The boards work surprisingly quickly, but I find I need to leave them on overnight in most cases.

Another disadvantage is that bees will just not leave some boxes. This can be true when using fume boards as well. If brood is present in the supers to be cleared of bees, especially unsealed brood, or if there is broken burr comb, the bees will be very reluctant to leave the boxes. If this is the case, you may have to do some shaking and brushing.

There is a certain knack as well to inserting the boards into the hive without first having to lift off the supers. If you are going to lift off the supers and replace them on the escape board, I would suggest breaking the boxes apart with your hive tool several days before. This will give the bees time to clean up the dripping honey from the broken burr comb. They will then tend to leave the boxes much quicker.

One last 'trap for young players'. Don't put the escape board on the hive upside down. It won't work that way, will it? And don't look so smug; its easy enough to do. Try painting the top of the board a different colour so you'll notice it as you place it on the hive.

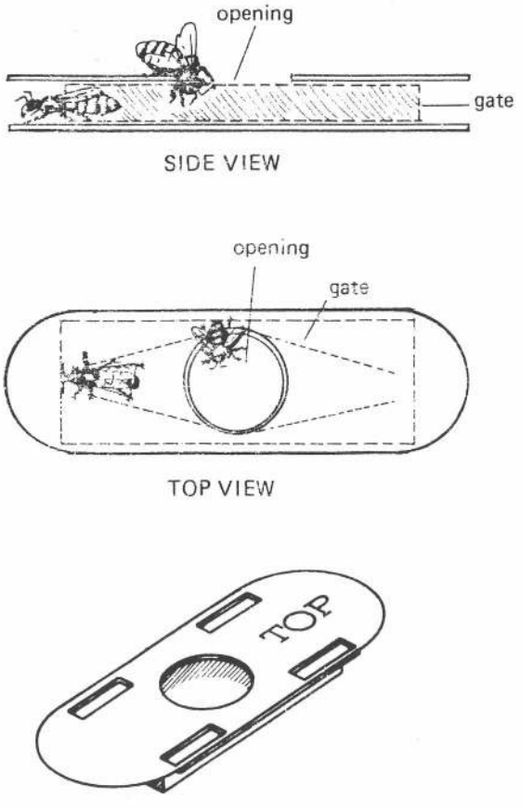


Figure 2: Porter escape

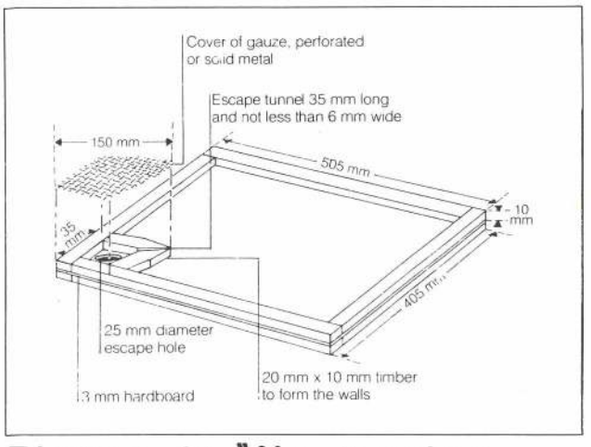


Figure 3: "No moving parts" escape board

One of the greatest bits of information I've picked up in recent years is that a 50mm rim around the bottom of the escape board will make it clear more quickly. It seems that the bees coming down through the escapes are rather slow to actually fan out into the lower box. Giving them this clustering space seems to cut down the 'bottleneck' at the escape exit.

One of the real advantages of the escape board over other ways of clearing supers of bees is that there is minimal disturbance. If you are in an urban situation, it is essential that you not be a nuisance to your neighbours. Used properly, escapes can be inserted and boxes of honey lifted off with no need to declare the beeyard 'off limits', and no danger of innocent bystanders being stung.

Many if not most commercial beekeepers use a bee blower to remove bees from the supers. This device has only really become popular in the last 20 years or so. Several models are used commonly in New Zealand. One is simply a modified backpack sprayer that is fitted with a small two-stroke engine and fan. Other beekeepers use a unit with a larger engine that is carried around by a handle from hive to hive.

The initial cost of a blower is far beyond what you as a hobbyist should outlay. Their main advantage is speed, critical for the commercial operator, but not necessary for

If you feel you must experiment with the principle, by all means have a go. I've heard all sorts of descriptions of reversed vaccuum cleaners, modified sprays, and the like.

For myself, I'll stick with the use of the bee escape board. They need not be complicated or expensive in construction, they rarely fail to perform as expected, and there is no danger of the honey becoming tainted.

Whatever method of taking honey you choose,there is one more unbreakable rule to learn. **NEVER TAKE HONEY FROM A COLONY THAT YOU HAVE NOT INSPECTED FOR DISEASE**. If you don't know what to look for, or have any doubts, get in touch with your Apicultural Advisory Officer or an experienced beekeeper. There is no easier way to come unstuck in a big way than failing to carry out this inspection. If a colony is found to be diseased, it can be dealt with in the proper manner. If you don't find it at the taking off honey stage, you risk spreading it to all your other hives, either through the extractor or when you super up with the extracted frames.

I hope you have all had an enjoyable and profitable season with your bees. With winter coming on, its a good time to sit

Taking Honey (cont.)

Figure 4: Bee blower in use

back and look at your beekeeping with the perspective of a completed cycle. Its also a good time to catch up on your reading. There's a wealth of information in books about bees. Our own Beekeepers' Technical Library, run by Mr John Heinemann, contains volume upon volume of both technical and general-interest beekeeping books, enough to keep you going through all the coming winter evenings. If you haven't taken advantage of the library yet, why not try it this winter?

ACKNOWLEDGEMENTS: Figures 1 and 3 reproduced from *Practical Beekeeping in New Zealand*, by Andrew Matheson, Government Printer, 1985.

Recycling

By D.A. Compton

With the cost of living now taking a large chunk of our profits, it is important to find ways of cutting costs. Recycling fits this bill nicely.

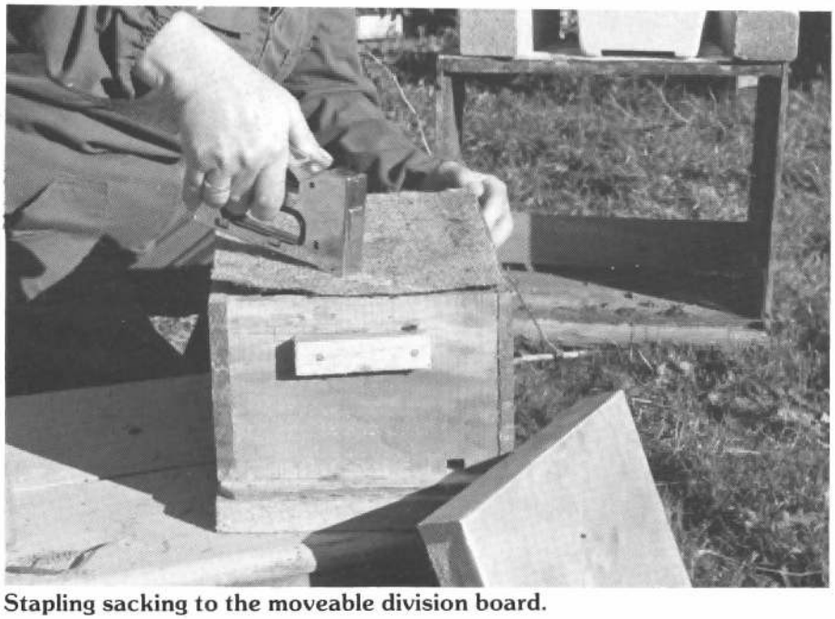
Now the Canadians seem interested in obtaining packages of bees from New Zealand during our autumn, and with further development within the Kiwifruit Industry, package bees may well become a way of life for New Zealand beekeepers. (*Figure one)

Once the bees have been removed from the packages you have an empty container: too damn good to throw away but of little value unless you are contemplating entering the package-bee business yourself. A few seasons back I decided to try package bees and was left with this problem. I had no wish to throw away a good box. There had to be something I could do with it! They sat around until the end of the season, and then I had the idea of converting a container into a useful mating nuc for raising my own queens.

First strip the package container of everything so all that is left is the basic skeleton from which to work. Do not throw away the mesh or side runners and other dismantled equipment as these will come in handy later.

As the original container is very lightly constructed it is advisable to use timber from fruit-tray building outfits as that is usually of suitable thickness and of workable size. This timber can be bought cheaply from the main building merchants.

As most beekeepers already build hive equipment, I will not go into minor construction details. For these we all have our different methods.



Stapling sacking to the moveable division board.

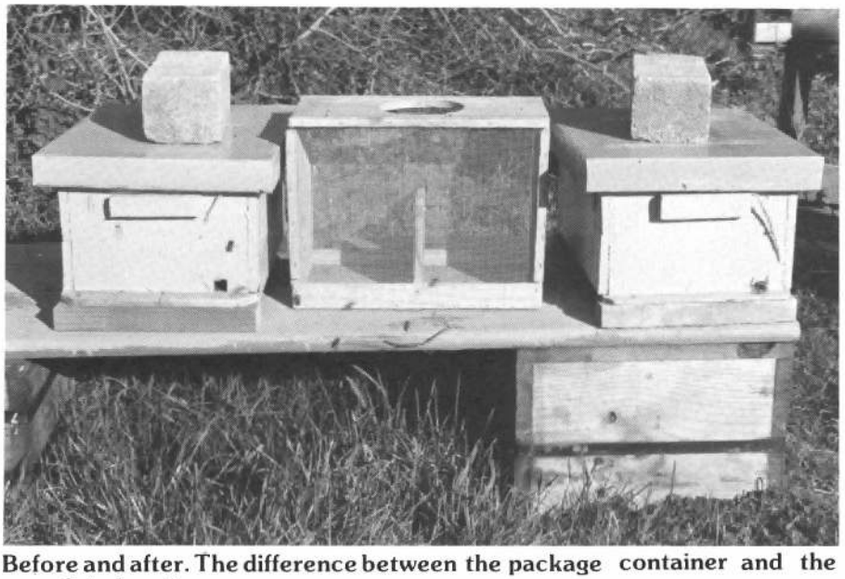
Once the package is stripped, the small hole in the top which holds the tin feeder can easily be patched with a small piece of aluminium. A floor is nailed to the bottom allowing an inch or so overhand as a landing pad for the bees. Now cut a small entrance in one corner and another in the opposite corner. Now, because if you leave them until the floor is in place, you will have a problem.

Put in a centre division and you have two small mating nucs. This division can be either permanent or, as in mine, a moveable board to allow for one large mating nuc or two small ones, depending on the number of queens required. With a moveable board a couple of fillets down the centre and a slight rebate in the bottom board will secure a tight fit. A couple of fillets at the top will allow the frames to sit freely in the nuc.

A piece of sacking (Figure 2*) stapled to the moveable division board will prevent any bees more interested in fighting than raising a queen from attacking each other through the small gaps. Any type of frame (Figure 3*) can be used for the nuc and, with a small piece of melted wax, you are on the way to producing your own queens.

Build the lid in the same way you would a standard lid except that your materials will be lighter and your scale much reduced. For the metal lidding I use aluminium, easily obtainable from a newspaper printing plant for a reasonable price.

You will find aluminium much easier to use because on such a small project it is an advantage to have a pliable material. As a finishing touch place a couple of small lugs at each end so they will carry the light lid without it twisting. The lugs also make good grips when you are working with the mating nuc (Figure 4*).

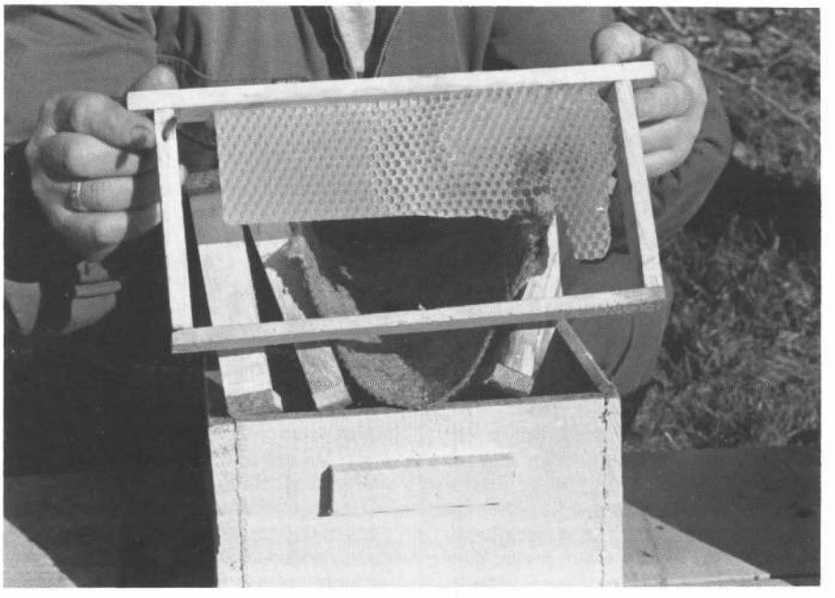


Before and after. The difference between the package container and the completed mating nuc.

Recycling (concluded)

Before long you will be producing queens from a converted package container that would have otherwise been thrown away as rubbish. Costwise a most effective exercise.

The end product. With a bit of paint all's finished.



A small frame showing the build-up of wax after its been in the nuc for a couple of days.

Colony standards for kiwifruit pollination

By Andrew Matheson A.A.O.

Kiwifruit pollination has really taken off for beekeepers in the northern half of New Zealand. Huge numbers of hives are being supplied to orchards, and demand is increasing.

Through this rapid increase in kiwifruit pollination, one question hasn't been resolved. Which is the best kind of hive for kiwifruit pollination.?

Opinions vary: should hives be strong honey-producing colonies, or smaller ones still building up? Why do some pollination contracts specify three brood frames, and others five? Does "five brood frames" mean five frames with brood on or the equivalent of five full frames? Is there sound scientific basis for demanding, say, five frames of brood instead of four?

A guideline or standard is needed for kiwifruit pollination hives, to ensure that growers get value for money.

This article outlines a standard developed (10) for kiwifruit pollination. Firstly, I review scientific work relating to the pollination efficiency of honey bee colonies, and then discuss the standard for kiwifruit pollination units. The most recent research results available indicate that hives which meet or exceed it are efficient pollination units for this crop.

POLLINATING ABILITY OF THE HONEY BEE COLONY

The aim of bekeeping for honey production is to build up colony strength, so the number of nectar-collecting workers is a maximum before the honey flow starts. Beekeeping for kiwifruit pollination must be very different: the plant produces no nectar, so colonies used must have a high number of pollen-collecting workers at flowering time.

Honey bee colonies collect pollen largely to support brood-rearing. The proportion of foragers in a colony that collect pollen, and the total amount of pollen collected, depends mainly on the amount of brood present. Individual bees change quickly from nectar collection to pollen collection, and vice versa, with changes in the amount of brood.

Many overseas scientists have found that the amount of pollen gathered is proportional to the total amount of brood present. For instance: in Californian almond orchards (12); in field crops and apple orchards (1); and lucerne fields(13).

Clinch (4) studied pollen collection over four seasons by colonies in Bay of Plenty kiwifruit orchards. The colonies that collected most kiwifruit pollen in each year had a mean of about 7,000 cm^2 of brood, and they collected significantly more than those with an average of 5,000cm^2 of brood, which collected the least.

While brood of all ages stimulates pollen-gathering, it is larvae (unsealed brood) which are especially important (6). This effect is probably caused by a pheromone produced by the larvae acting on the foragers. A colony which is still expanding has more unsealed brood than one with the same brood area, but which has a static or declining population. For this reason, colonies still expanding ("on a rising plane") are most effective for pollination. McGregor (9) suggested a guideline of at least 25% of the brood area unsealed (young larvae or eggs). Colonies must have enough empty combs to allow the queen to continue laying at her full potential, if this proportion is to be maintained.

Because exposure to unsealed brood stimulates pollen-gathering, brood should be located in the bottom box so it is nearer the hive entrance. This has been found to markedly increase pollen collection (7).

Queenless colonies are almost useless as pollinating units. They collect only a small proportion of the pollen collected by similar, queenright colonies: 12% (13), or 1.5-10% (1). Though some combs in queenless colonies can become pollen-clogged, this is because virtually no pollen is being used, and not because the bees are collecting more.

Populous colonies do, other things being equal, support more brood-rearing and collect more pollen than weaker colonies. Moeller (11) found that colonies with 35,000 — 40,000 bees were most effective as pollination units. However, kiwifruit pollination colonies are normally housed in two-storey hives, which somewhat limits their possible size. Clinch (3) found that, in general, colonies with 11-12 frames of bees collected most kiwifruit pollen.

Colonies must not be allowed to become too strong, as overcrowding can lead to a reduction in the queen's laying rate or even swarming. Both are very detrimental to pollination efficiency.

To avoid this happening by kiwifruit flowering (late November), overwintering hives will usually need brood and bees removed and replaced by empty combs. An alternative is for nucleus colonies to be made up in late summer, overwintered, and built up in time for kiwifruit pollination.

There is no scientific evidence that use of pollen traps will increase pollen collection by colonies used for kiwifruit pollination, even though it seems logical that "it should". The use of pollen traps

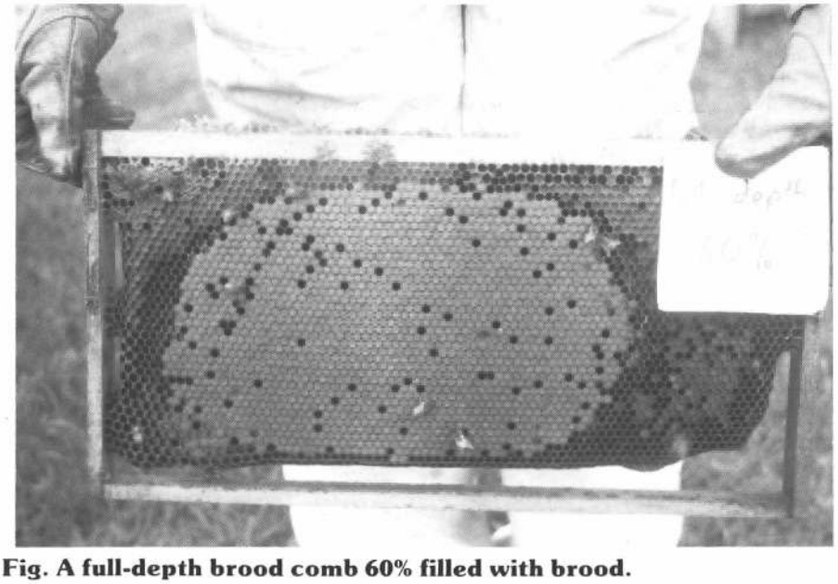


Fig. A full-depth brood comb 60% filled with brood.

Colony Standards (cont.)

may in fact reduce pollen gathering, if brood production is depressed.

Clinch (4) fitted efficient pollen traps to colonies in kiwifruit orchards to see if this increased overall pollen collection. By fitting low-efficiency traps to both experimental and control colonies he could compare the pollen collection by both groups. There was generally no significant difference.

Giving pollen or pollen supplements to colonies causes a decrease in the amount of pollen collected (6).

Most evidence favours the view that sugar-feeding increases pollen-gathering by honey bee colonies. This happens in two ways: because sugar feeding stimulates egg-laying, the resulting increase in brood area stimulates foragers to gather more pollen. The other mechanism by which this increase in pollen collection takes place is the changed behaviour of hive bees. Instead of receiving nectar from incoming foraging bees, many hive bees are instead processing sugar syrup. This discourages foragers from collecting nectar, and many change to pollen-gathering.

British experiments (5) found that feeding 40% sugar syrup to colonies pollinating field crops increased overall pollen gathering by between two and five times. Colonies in red clover fields also gathered a higher proportion of pollen from that species, probably because pollen gatherers forage closer to the hive than do nectar gatherers.

Feeding sugar syrup to kiwifruit pollination colonies should increase their efficiency, though there are currently no scientific results to confirm this.

The proportion of foragers visiting crops is increased if the introduction of hives is delayed until after flowering has begun (8). The optimum time depends on which crop is being pollinated — for kiwifruit 10-20% of female blossom is recommended (3).

STANDARD POLLINATION HIVE

* **Brood area**

At least 7,000 square centimetres of brood, which is equivalent to four full-depth or 5.5 three-quarter depth frames packed out with brood.

It's deceptive to talk in frames that are theoretically packed out, as these never occur in practice. A really full frame is usually no more than 85% full, because of corners and the top or bottom strip being missed. "Good" frames are usually about 60% full — a surprising figure, but one which can be verified by actually measuring the brood area. (See Fig 1.).

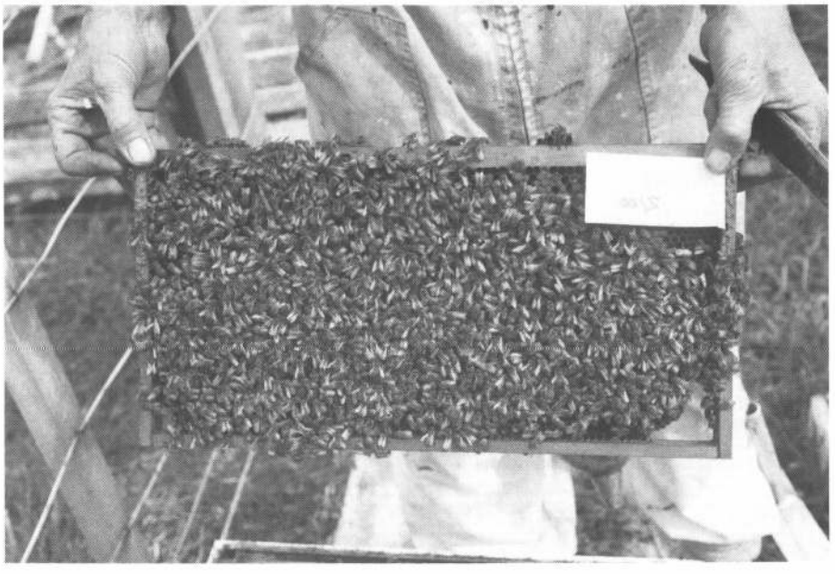


Fig 2. A full-depth frame of bees.

The required amount of brood for a kiwifruit pollination unit is equivalent to seven "good" (60% full) full-depth frames, or nine "good" three-quarter depth ones. If the brood is in smaller patches on the comb, more than seven full-depth frames or nine three-quarter depth "brood frames" will be needed.

* **Age of brood**

At least a quarter of the brood should be unsealed. This young brood provides the most stimulus for bees to collect pollen.

* **Position of brood**

Most of the brood should be in the lower box, as here it encourages foraging bees to collect more pollen.

* **Queen**

Colonies must have a young, prolific queen to reach the required brood area.

* **Bee numbers**

At least 12 full-depth frames of bees, or 16 three-quarter depth ones. Obviously there's no place for single-deckers in a kiwifruit orchard.

* **Empty combs**

Enough combs to encourage colony expansion and to allow the queen room to continue laying. Foundation

Colony standards (concluded)

does not provide room for expansion prior to the honey flow.

* **Honey stores**
At least three frames (or equivalent).

* **No AFB.**

MANAGEMENT

* A colony with 7,000 square centimetres of brood needs a queen to lay nearly 1,500 eggs per day. This is a high figure, and a queen must be young and well-reared to reach it. Obviously one of the most important ways of making hives for kiwifruit pollination is to ensure that they are regularly requeened with good stock.

* A common problem at kiwifruit pollination time is with overwintered hives being too strong for pollination. These hives aren't ideal pollination units because room is restricted, the queen slows down her laying, and the amount of unsealed brood declines. It is unsealed brood that is most important for stimulating pollen-gathering.

Hives that are very strong in early November must be given extra space. Take away honey and sealed brood and replace them with empty, drawn combs to give the queen laying room.

* Beekeepers usually underestimate brood area. As the photo shows, "good" brood frames are (surprisingly) only 60% covered on average. It's frames like that which we use as a guide for pollination hives (seven full-depth frames needed, or nine three-quarter depth ones).

* Bee strength can be estimated fairly accurately by counting the number of bee spaces between frames which are filled with bees. This can be done easily without removing every frame, but by counting the bee spaces filled at the top and bottom of each base.

For instance:

Number of bee spaces filled with bees:

Top box:	top 8;	bottom 10;	average 9
Bottom box:	top 8;	bottom 6;	average 7
			TOTAL 16
			frames of bees

This method is fairly reliable for estimating the number of frames that are well-covered with bees one bee deep (see Figure 2.).

Kiwifruit-pollination beekeepers need to pay careful attention to colony build-up, and quality control to ensure that no "duds" are rented to orchardists. Growers paying a pollination fee have every right to expect hives that consistently meet or exceed the standard agreed on.

REFERENCES

1. Al-Tikrity, W.S.; Benton, A.W.; Hillman, R.C.; Clark, W.W. 1972. The relationship between the amount of unsealed brood in honeybee colonies and their pollen collection. *Journal of Apicultural Research* 11(1): 9—12.
2. Clinch, P.G. 1984. Kiwifruit pollination by honey bees: 1. Tauranga observations 1978—1981. *New Zealand Journal of Experimental Agriculture* 12: 29—38.
3. Clinch, P.G. 1985. Personal communication.
4. Clinch, P.G. 1986. Kiwifruit pollination by honey bees: 2. Pollen collection by colonies with and without high-efficiency pollen traps. *New Zealand Journal of Experimental Agriculture* (in preparation).
5. Free, J.B. 1965. The effect on pollen collection of feeding honey-bee colonies with sugar syrup. *Journal of Agricultural Science* 64: 167—168.
6. Free, J.B. 1967. Factors determining the collection of pollen by honeybee foragers. *Animal Behaviour* 15: 134—144.
7. Free, J.B. 1979. Managing honeybee colonies to enhance the pollen-gathering stimulus from brood pheromones. *Applied Animal Ethology* 5: 173—178.
8. Free, J.B.; Free, N.W.; Jay, S.C. 1960. The effect of foraging behaviour of moving honey bee colonies to crops before or after flowering has begun. *Journal of Economic Entomology* 53(4): 564—566.
9. McGregor, S.E. 1976. Insect pollination of cultivated crop plants. USDA Agriculture Research Handbook No. 496, 411 pp.
10. Matheson, A.G. 1985. Kiwifruit pollination hives. *Beekeepers' Bulletin* 7(2): 2—4.
11. Moeller, F. 1977. Managing colonies for pollen production. *Proceedings of the XXVI Congress in Apiculture, Adelaide*: 232—239.
12. Shessley, B.; Poduska, B. 1979. Relative values of honey bee colonies for almond pollination. *American Bee Journal* 110(9) : 346—347.
13. Todd, F.E.; Reed, C.B. 1970. Brood measurement as a valid index to the value of honey bees as pollinators. *Journal of Economic Entomology* 63(1): 148—149.

LETTER TO THE PRESIDENT

Dear Mr Berry,

May I thank you and all concerned with the honey production in New Zealand for their friendly co-operation and financial sponsorship during my recent visit to your beautiful country.

Since I am called upon for the microscopic examination of honey samples imported or offered for sale in Great Britain it is indeed valuable to see the land and the methods concerned in their production.

I was therefore glad to see the vast areas of sheep farming which is the source of the well known New Zealand Clover Honey. I was also given the opportunity to see and discuss the Beech honeydew honey and the other specialist types.

Mr John Smith, A.A.O. Christchurch made most excellent arrangements for us during our stay which enabled us to see something of the country and also to meet the beekeepers and discuss the various aspects of honey production.

For some time I have corresponded with Dr Neville Moar on the pollen examination of honey. As you will know he has just completed a report on the application of this to NZ honeys. It was good to meet him in person. I was also glad to talk to a meeting of beekeepers at Christchurch on this subject.

We most thoroughly enjoyed our only too short stay. I did actually apply for a teaching job in NZ many years ago but there were no vacancies — had I known what a wonderful country you live in I would have been far more persistent!

So my best wishes to you all.

R.W. Sawyer, B.Sc.
Melissopalynologist.

Survey of kiwifruit pollination hives in Nelson

By Andrew Mattheson A.A.O.

The increasing demand for kiwifruit pollination has changed the face of beekeeping in many parts of New Zealand. Now many beekeepers are running their hives mainly, or even solely, for pollination.

Kiwifruit is not easy to pollinate:

- male and female flowers grow on separate plants
- the flowers produce pollen only, and not nectar
- both sexes of flowers produce pollen, but only male pollen is fertile
- at least 2,000 male pollen grains must be transferred to each female flower to produce an export-grade fruit.

Because of these unique features, hives used for kiwifruit pollination must be specifically prepared for the job. Last spring the Ministry of Agriculture and Fisheries conducted detailed surveys of hives in kiwifruit orchards in Nelson and Northland to examine the standard of service provided by beekeepers. Quality assurance checks on hives were also made by beekeeper associations in Nelson and the Bay of Plenty.

This article reports the results of the Nelson MAF survey.

SURVEY METHOD

MAF is required, for disease control purposes, to have lists of seasonal pollination sites used by beekeepers. From these, MAF is able to ascertain the number and location of hives used for kiwifruit pollination.

The survey was carried out by MAF apiary inspectors, qualified and warranted for disease control. During late November 1985, teams of two or three inspectors visited at least three kiwifruit orchards serviced by each commercial pollination beekeeper. This spread was to obtain as representative a sample of hives as possible. Smaller numbers of properties were surveyed for beekeepers who supplied only small numbers of hives.

At each site the team recorded some details of hive numbers and orchard area. They then selected at least four hives at random to examine frame by frame. Information was recorded about each of these hives as follows:

- presence of dead bees
- size of hive
- bee strength (frames)

Pollination hives in kiwifruit orchard.

- brood area (sq.cm.)
- brood location
- honey stores
- pollen stores
- empty combs
- laying pattern of queen
- diseases present
- hive orientation and shelter.

RESULTS

Detailed measurements of brood area and bee strength were made for 172 hives, located on 38 different properties. The average bee and brood counts are given in Table 1, which separates the results for members of the NBA-registered pollinators' scheme and those for non-members

Table 1: Average bee strength and brood area of pollination hives

	Overall	Scheme member	Non-member
Average bee strength (FD frames)	13.2	14.0	11.4
Average brood area (sq.cm)	8178	8941	6790

The results for each hive were then compared with the minimum hive strength specified by the local NBA branch in their registered pollinators' scheme. The standard recommended by MAF (described in elsewhere in this issue) was not developed in time for beekeepers to implement in the 1985 season.

Members of the NBA-registered pollinators' scheme undertook to supply hives that met the following criteria:

- at least six full-depth brood frames (or equivalent)
- the hive to have brood at all stages of development and room for expansion.

Six full-depth brood frames was taken to be six "good" frames of brood, which contain brood in 60% of the total area. That's 1050 sq.cm. per frame or 6300 sq.cm. in total.

Table 2: Results of kiwifruit pollination hive survey, Nelson, 1985.

	Total	Scheme members	Non-members
Beekeepers surveyed	18	14	4
Properties visited	38	28	10
Hives measured	172	111	61
Satisfactory hives : number	131	90	41
%	76%	81%	67%
Unsatisfactory hives : number	41	21	20
%	24%	19%	33%

Other trends from the survey were:

Laying rate:

Brood patterns were generally good, apart from the hives with queen failure

→

Kiwifruit survey (cont.)

or problems. Some patchiness was present due to changeable weather. Hives with good queens mostly had enough room to allow full laying, and thus a high proportion of the brood was unsealed.

Stores:
Usually adequate honey stores, though some hives were light.

Dead bees:
Almost all hives had the few dead bees that result from shifting. Only in one or two were a greater number of dead bees found, indicating that bee poisoning was not a significant problem in Nelson during the 1985 kiwifruit pollination season.

Hive location:
Hives were mostly well-positioned, to maximise sunlight and shelter. A few only were badly placed (under vines or shelter belts).

Seventy percent of properties had hives in groups, and only 30% had them placed singly.

Floral competition:
Very litle was present in the orchards. The ground in most orchards was mowed at the right time.

Timing:
Hives were often brought in before the recommended 15—20% of female flowering.

CONCLUSIONS AND DISCUSSION

Beekeeper practice.

Kiwifruit-scheme members' hives were generally quite even in strength and above the minimum quality, which shows a good standard of management. The main concern must be to reduce the proportion of "duds" that slip through the screening process into orchards.

Causes of these failures are:
— queen-related problems
— inadquate build-up prior to pollination.

Hives provided by several beekeepers outside the scheme were much less consistent in strength. The proportion of inadequate hives was much higher than that for scheme members, and those hives that weren't adequate were mostly much shorter of the mark.

Common causes of failure were:
— total queenlessness leading to a break in brood-rearing
— swarming doing the same
— inadequate build-up
— insufficient stores
— disease (AFB).

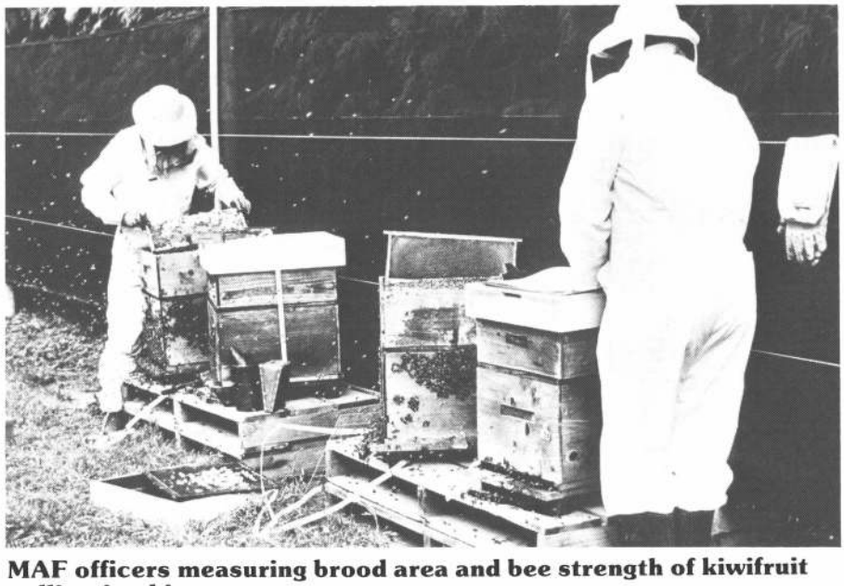
For all beekeepers queen failure was the single most common reason for hives not reaching adequate strength. Pollination hives must be requeened routinely, and not just when symptoms of failure appear. Annual replacement of queens prevents most queen failure (e.g., swarming or queenlessness), and 18-month intervals are a minimum.

Grower practice.

Most growers seem familiar with the requirements for hive siting and mowing orchard ground cover.

The same can't be said for the timing of hive movements. Hives were often moved in before 15—20% of female flowering. This means that if other floral sources are available, many bees will find them and neglect kiwifruit. The introduction of colonies must be determined by the development of female flowers, not males.

Many growers seem unaware of these facts, judging from comments I heard, such as: "I thought the bees should be in early to let them get used to the place", and "I know it's a bit early but I had them in on that date last year."



MAF officers measuring brood area and bee strength of kiwifruit pollination hives.

RECOMMENDATIONS

NBA branches and pollination associations.

1 The minimum standard for kiwifruit pollination should be more detailed where necessary, at least to specify bee strength as well as brood area. The MAF guidelines (discussed elsewhere in this issue) are suggested for adoption.

2 Branches and associations should continue to work with MAF to make members aware of these standards and how to implement them.

Beekeepers.

1 Improve quality control or checking procedures, to ensure that weak hives are not put out inadvertently.

2 Increase the frequency of routine requeening of pollination hives.

3 Develop better programmes for monitoring the build-up of pollination hives.

Growers

1 Ensure that hives are not shifted in before 15—20% of female flower. Split deliveries may assist with timing when floral development is erratic and spread out.

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NEW PRODUCT

Ceracell Foundation Ltd is offering a one-piece, queen-introduction cage made from heat-resistant polypropylene and with several unique features.

The cage is one-piece and tinted brown to protect the queen from overexposure to light. it has separate hinged lids for candy and main cage, and there are trap doors at each end to "pop" the queen in safely.

A new beekeeping concept

By: Erik Osterlund and Bjorn Lagerman

Honey and wax can be efficiently separated by exactly the same method as that used to separate milk and cream. Bjorn Lagerman, an up-and-coming beekeeper in central Sweden, realised this in 1978. In the same year he once forgot to replace frames in a super when he replaced it on a colony. Three weeks later he discovered the frameless super of 55lb of honey.

To handle this honey was messy, but he saw that by combining those experiences modern beekeeping might develop with a giant leap.

With these basically simple ideas, Bjorn Lagerman has developed the so-called Free Beekeeping System, which he finds radically improves conditions for both bees and beekeepers.

The project has been financed by the Royal Forest and Agriculture Academy, the County Agriculture Board, the County Development Fund, the National Swedish Board for Technical Development, and by three other foundations. The methods and vital equipment are protected by three Swedish patents.

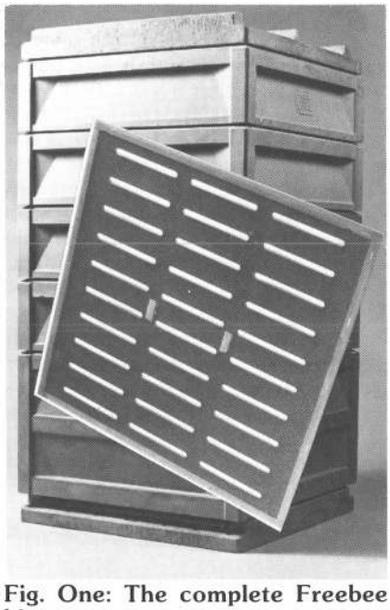


Fig. One: The complete Freebee hive.

THE HIVE

Free Beekeeping can be followed with any kind of hive and size of broodframe, but to assimilate all possibilities of the system, Mr Lagerman points out the need to understand that brood and honey production benefit from different factors. Since his supers contain no frames, they and the brood-box may be designed independently of each other according to specified needs.

Fig. two: Super with two slotbacks, two aluminium strips, and wax foundations.

Bjorn Lagerman makes his hives of Polyurethane in hydraulic-powered steel molds. Polyurethane can be used for any design. It is fairly cheap, very light, durable, and waterproof without a finish. It is also an extremely good insulator.

The hive consists of an excluder bottom, one 12-frame modified Dadant broodchamber with a vertical division board, a super excluder, three supers, one feeding tray for feeding two colonies at the same time and on top of the colony. Since the hives are very light there is also a strap per hive to secure them firmly to the hivestands.

THE SUPER

For several reasons Bjorn finds that the super should be low, about 15cm. With a low unit the bees occupy the box quickly and ripen the crop evenly. The bees can be cleared from this super either via an escape board or by blowing them out. The weight may be limited to a reasonable load of 20-25kg. A 'Freebeesuper', as Lagerman calls it, measures 464x464x148mm inside, and consists, besides four walls, of two slotboards, two stripes, and a bundle of waxsheets.

THE SLOTBOARD

By using two slotboards for each super-one at the top and one at the bottom-Lagerman has made a module system where the supers are detachable from each other. His slotboards are made of 3.2mm masonite with punched slots corresponding to the normal beespace of about 10mm between the combs. Where two supers meet, two slotboards also meet and since the slots are symmetrically distributed the bees can pass between the supers without any screening or hindrance. To obtain beespace between two meeting slotboards there is, on one side of each board, a 3.2mm rim around the edge. This solves any problem and makes it easy to part the supers from one another.

The slotboards thus supply the bees with unlimited normal passages, abutment for the combs, and permit any super to be removed independently.

A filled super with the slotboards fixed to the combs is very solid, handy to lift, and durable in transit.

THE STRIPS

To carry the waxsheets and to prevent the weight of honey bending the slotboards, Lagerman uses two strips in a super. Aluminium profiles, 15/15 x 475mm, are strong, easily cleaned, and convenient for melting the two notches in the wax as well as for threading on the wax.

THE WAX

With Freebee management the bees may produce more wax than is conventional. This means young bees are

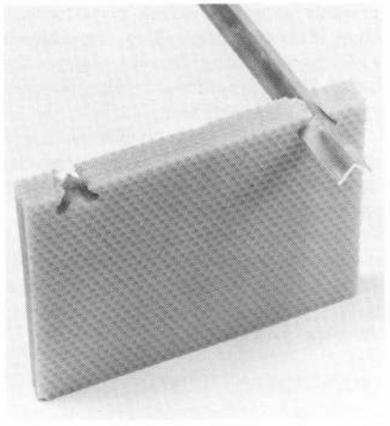


Fig. three: Bundle of superwax showing how the notches are made.

A new concept (cont.)

occupied and so less prone to build swarm cells. It also means less investment in foundation and a considerable net profit from wax.

Wax production requires energy but will diminish profit. If you give bees drawn combs they must carry wax to the honeyflow. The waxsheets they produce are their 'sweat' and if they don't use it for building it is garbage that must be cleaned out. Wax production is probably a direct result of high metabolism in the colony. During the honeyflow bees build combs during the night and are thus ahead with storage space in the morning.

The need for wax foundation in the supers is a question of usefulness and cost. Lagermans' experiments with different amounts, sizes, and designs, leads him to conclude that the wax sheets function mainly as ladders for the bees to climb to the ceiling, and as growth zones for comb construction. Bees build in groups along the edges of existing wax. The development of the comb depends on the length of edges as well as area of wax.

One could of course give as much foundation as is normally used for frames, but Lagerman finds that not necessary and uneconomical.

The foundations for a super of his design are nine sheets measuring 160 x 142mm. 142mm is important because it lets the wax hang freely and still enables the bees to climb on to it.

Fig. four: Filled super with top slotboard torn off.

HONEYHANDLING

Harvest

Whether the crop is ripe or not an experienced eye can judge by a glance through the slots. To remove the bees from the supers, Lagerman places them upon escape boards of a modified New Zealand type with four ways (one in each corner) instead of one. The advantage of this type is that it has no moveable parts to stick. Normally the supers are completely emptied within 24 hours. Occasionally, a small cluster of young bees remain, but they are easily blown out of the super.

Processing the Honey

To extract honey frame by frame can be tedious and messy whether you are handling 300 or 3000 kg per day. But with Freebee supers you handle one tenth the number of units because, instead of two kg frames you have 20 kg blocks of honey. With the block held over a grinder, the slotboards are torn off. A sharp jerk will tumble the combs into the grinder. The mixture of honey and wax is pumped via a buffer vessel into a separator. The separator, spinning at about 1,000 rpm, separates 500 kg of honey and wax per hour. The clean honey flows off into an outer vessel from where it is pumped for storage. The wax, falling into a container below the separator, will still carry 2% of honey.

In principle it is possible to separate honey from a material of different density, it is simply a question of speed. Lagermans' machines are developed from the Cook and Beal spin - float separator. As Lagerman considered its capacity exceeded his needs he chose to construct smaller and cheaper machines with some improvements.

With the above beekeeping system it is not necessary for everyone to own extracting equipment. Those with separators can contract for others, leaving beekeepers free to devote themselves to their passion — bees.

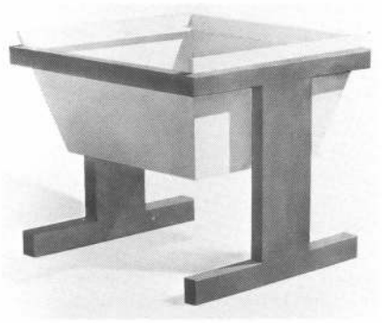


Fig. five: The grinder.

EXPERIENCES

Where Bjorn Lagerman lives the nectar-giving flora is good. With good bees and good management it is not uncommon to average about 150 lb. That figure seems to be about the same with the Freebee system. Even in a bad year like 1985, with very few days for nectar gathering, Lagerman got about 90 lb from normally strong colonies, about average for the area.

Probably it is an advantage to use bees that are good comb builders. Lagerman uses Buckfast bees, known among other things for their good comb-building ability. Strong colonies are always best for results. And in the Freebee system the colony strength must be above a certain level to produce the warmth needed for comb building. A strong colony strength can, under certain circumstances, create swarming. However, with Buckfast bees that shouldn't be a big problem.

Lagerman is keen to exclude everything beyond his control. Therefore, his partially two-queen system, with the excluder bottom, is a very interesting solution: both to produce strong colonies early in the season as well as to control any tendency to swarm.

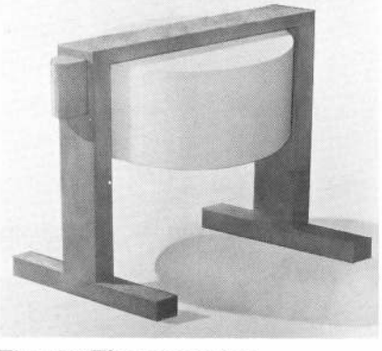


Fig. six: The separator.

A new concept (cont.)

SEASONAL MANAGEMENT

I shall now comment on some features of Lagerman's hives that, together with the Freebee technique, reduces his seasonal management to a minimum and increases his crop to a maximum.

With swarm control, queen renewal, and safe wintering there is one crucial factor; the capacity of the broodchamber. The benefits of one single large broodchamber, the 12-frame Modified Dadant, are well recognized throughout the world. Its one drawback is that it is too big for supers, thus demanding another frame size for supers. Since Freebee does away with supeframes this problem vanishes.

In addition to Brother Adam's well-founded comments in favour of the 12-frame M D as compared to Langstroth, the M D, together with Lagerman's excluder bottom, may be a solution to the major problems of modern beekeeping.

The Freebee excluder bottom.

This bottom device as illustrated enables the beekeeper to control by a single handgrip the direction of flight and to decide whether the bees will pass through the excluder or not.

Scheme

The following scheme should be adjusted to each hemisphere's major honey flow and swarming season.

June

In the middle of June, as the swarming approaches, the colonies have about 10 frames of brood (MD) and at least one super above an excluder. You control thus. 1) Put the vertical division board in the centre of the broodchamber, 2) Take the entrance strips from the back of half the broodchamber and place them on the front of the same half. The bees of this part

→

Help prevent disease

A farmer wants healthy cows, sheep, deer, or goats, an orchardist trees, bushes, or vines free from troubles, a householder a doggie or pussycat in good condition, and a beekeeper A1 colonies (no matter if it's one in the back yard or 5,000 round the country side). However it is a sad fact of life that all life is prone to diseases and pests.

The larger the concentration of a single species in an area the greater will be the risk of dire consequences during a serious outbreak of an infectious disease or pest.

Twenty colonies of bees on a side will represent a population of millions 1.6 by the time hive strength reaches 80,000. What will the figure be for some kiwifruit districts and places where large hive numbers are brought together? Also transport, stockpiling, and unavoidable drifting must increase disease risk considerably.

Vets, MAF, custom officers and agricultural quarantine people all do their best to keep out what we don't want and deal with whatever troubles we already have. They are fighting a battle for us. It is in our paramount interest to join that battle. So if we have chosen to manage a few hives as a pastime or a larger number for a living (hopefully), then we must equip ourselves as well as possible to recognise the enemy when it arrives.

The Executive Secretary of the NBA has asked me to bring to the notice of readers those items held in the Library which can assist beekeepers to identify diseases that can affect bee colonies. There is a lot of material on the subject, but a short list of books will be sufficient for practical purposes.

Practical Beekeeping In NZ by Andrew Matheson, *Honey Bee Brood Diseases* by Henrik Hansen (good colour photos), *Honey Bee Pests, Predators and Diseases* by Roger A. Morse, *Infectious Diseases of the Honey Bee* and *Honey Bee Pathology*, both by Leslie Bailey.

We also hold a film and a video on the subject of bee diseases, these would be best for group showing.

Join the battle together with your advisory officers, part-time inspectors, and all others involved. Be prepared and we might — just might — hold the fort.

NBA Technical Library, PO Box 112, Milton. 30¢ per book loan fee and postage. Send $3 minimum together with your initial request. Any balance credited against your next loan.

John Heineman

A new concept (concluded)

of the broodchamber thereby get a new flight direction and strong nucleus is established.

It is advantageous to see that the queen is in the nucleus part. She will then continue egglaying instead of swarming. To prevent overcrowding before the nucleus gains access to the supers, exchange a sealed broodcomb for one with open brood between the two halves. The nucleus should be weakened and screened off from the supers to prevent equalising. A plastic film will serve for this purpose.

Thus a nucleus is easily formed. It looses any tendency to swarm because it has lost its foraging bees, which will use their usual entrance.

The foraging side with access to the supers looses its queen and is soon without open brood. Its foraging capacity increases. To replace the lost queen a number of queen cells will develop over about 12 to 16 days. Before any queen hatches block the entrance above the excluder by placing an entrance strip there.

If the division is carried out by June 15, you can be sure that by July 5 there will be one new queen only left on the foraging side. Since the queen cannot swarm she must kill her hatching rivals. To let the queen out for mating the entrance strip is removed. At this time the plastic above the nucleus is replaced by a sheet of newspaper to let the bees work together in the supers.

July

About July 10 there will be two queens laying. All you need do is to ensure that there is ample room for the crop.

August

The heather ends our season in Sweden. With two queens the colonies are strong, and any tendency to store the last crop in the broodchamber is reduced. In Sweden heather honey and many autumn honies can easily give colonies dysentary because they have been confined for five months without a cleansing flight. Also sugar is much cheaper than honey in Sweden. Therefore we leave as little honey as possible for winter feed. The colonies are given white sugar in a 60% water solution.

September

The last brood of the season is located towards the division board in the centre. Dark combs are therefore removed from the outer sides and new foundations given in the centre. The combs thus circulate and are renewed in three to four years.

October

When the flying season is over the entrance strips are removed from under the excluders. The bottom under the excluders is thus effectively ventilated. By the end of October there is little more than a tranquil murmur from the bees. They are protected and dry.

Winter

Under this system there are two colonies in each hive. They occupy most of space, warm each other, and leave a minimum of condensing corners. The moisture rapidly leaves the hive. Since the colonies are above the excluders they are completely protected from rats or mice.

March

After the cleansing flight the entrance in one of the sides is closed. In the other direction one closes under and above the excluders as shown below, so as to make two entrances as far from each other as possible.

April-May

During April and May the colonies build up separated by the vertical division board. They support each other with warmth through the board and expand rapidly. The first super is needed before the end of May, if not for honey storage from considerations of space. Between the supers and the broodchamber there is of course an excluder.

At the end of May or in the first week of June the two colonies are united by simply pulling the division board up and setting it farthest out on any side. If there is a need for surplus queens to replace failing ones, to increase the number of hives, or for selling nuclei, the elder queen is taken along with appropriate brood. If the elder queen is not needed the bees will dispose of her.

The growth of the united colony will be explosive. The brood from two queens means about 5,000 bees hatching daily. The second super is needed soon. As the swarming period approaches and, with it the division of the colony, the circle is complete and the procedure is repeated as described.

With less labour and expense you can keep strong colonies and have a surplus of queens at the right time and place. Wintering is no problem, and you can easily control swarming.

Using the Freebee system Lagerman has cut his costs. He points out that his system should either decrease the cost of honey or increase the profit. He hopes both.

New Product

By July this year the last waxed honey containers will roll off the production lines at Lilypak. "Because the machinery used to manufacture the 400W and 700W honeypots is outdated we shall phase these products out." said Brian Beamiss, National Sales Manager — Packaging Products. "However, we are replacing these containers with five different containers in four sizes."

The pots, made from high impact polystyrene using the latest thermoforming techniques, will offer a choice of two lids. The first, the standard Rimlock thermoformed lid and, because of many requests from the honey industry, a new heavy-duty injection moulded lid. The injection moulded lids offer better product-security and eliminate the ageold problem of cracking with constant re-use.

The new pots are:

750BP — packs one kg of honey, and replaces the 700W which held 900gm

560LP — packs 750gms of honey and is another new size

500 HY — packing 500gm of honey, is of similar shape and proportions to the old 400W

395SP — packing 599gm of honey, is squatter than the 500HY and has already proved popular

200SP — holds 250 gms and is ideal for tourist packs. Squat, it packs more easily than the old container of this size.

All pots can be printed with up to five colours and the lids four colours. The modern offset printing process offers high quality graphics.

Lilypak have also redesigned their stock honey container to carry three colours and to allow for the clients name to be printed in a address panel. Barcodes can also be added. These containers will be sold through local beekeeping-equipment wholesalers.

Lilypak says it intends to offer the honey industry the best packaging available. Existing users of own-design 400W and 700W will be contacted during April with details of change over, costs, etc.

Brian Beamiss, John Wesley, or Brent Cannard will be pleased to further discuss their products. Phone Auckland (09) 837-0510 or write to P.O. Box 21-296, Auckland 8.

New president for next term

During my three terms as President I have tried to accept any opportunities to put forward the NBA's viewpoint on national and local radio. Interviews with Phillip Liner, Lindsay Yeo, the commercial radios at Tauranga and Greymouth are some that come to mind. I have also done a number of interviews with Hugh Chappell for Radio's Rural Report.

As well as covering various items of news relating to the beekeeping scene I have made a real effort to get the message across to the general public of the dangers to our industry of bringing honey, bees, or bee products back into New Zealand when returning from overseas. The amount of time your Executive has spent working with the Agricultural Quarantine Service shows the importance we place on this matter.

The latest interview with Hugh was taped on 29 January 1986 and we covered such things as the prospects for the current honey crop — the keen demand for honey on the export market — the risk of the New Zealand market being short of honey later in the year if too much is exported, and the disease problems which could arise if foreign honey was imported into New Zealand. We also touched on the rapid expansion of our industry with the 30% increase in hive numbers since 1981.

I was surprised to receive a copy of a letter sent to our Executive Secretary complaining about the broadcast and asking that the complaint be tabled for discussion at our next Executive meeting. The basis of the complaint was that this broadcast was "totally counter productive to our recent efforts to lift prices for the benefit of all beekeepers". The writer can rest assured that the complaint will be fully discussed.

GST on Hive Levy

Some surprise has been expressed that 2.5% Goods and Service Tax has been added to this years' hive levy. I can give an assurance that this is not a mistake as I was in the Wellington Office when Mrs Olive Hebron checked this out with the Inland Revenue. The 2.5% is for the three months from 1.10.86 to 31.12.86 which is covered by GST.

New President needed

I have decided not to accept nomination for another term as President. There are two reasons for this. The amount of work involved with the Presidency of the NBA, on top of a busy season of pollination work and a big honey crop in Hawkes Bay, have reduced my enthusiasm for the job plus the fact that we have at present five other members on the Executive who each have the experience and the ability to make a good President. Whether they have the time is something only they can decide but I feel I have done my bit and it is now time to spend more time working in our family business.

Ian Berry

beelines

By Queenie

A bee C and 2,000 pikelets later

Time is running out. I check the list again — seats out? Yes! Interesting things on table? Yes! Mugs? Yes! Cordial? Yes! I still have to put up the posters and finish the last batch of pikelets.

"Don't panic," reassures hubby (who never worries), "they're sure to be late."

They are not late! Ten minutes before we are ready, the first arrival jogs over the hill. Within seconds, a swarm of excited young bodies pours in the gate slung all over with school bags, sweatshirts, sneakers, socks, sunhats, and other essential equipment, dumped en masse on the lawn to create a clutter mountain to rival any EEC equivalent.

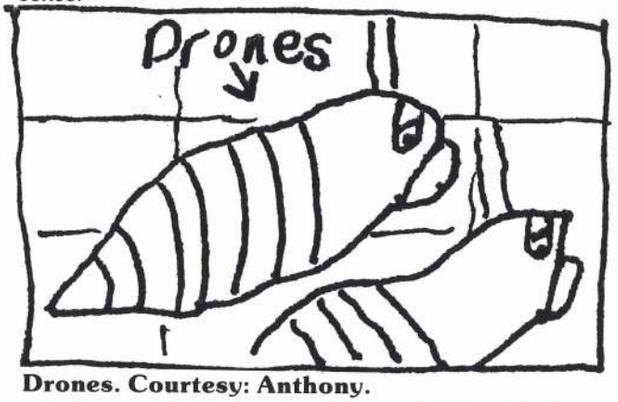
Free of their burdens the kids loosen up, say "hello." They "hello" our toddlers, the dogs, cats, goats, chooks, and the rabbit. By the time everyone has "hello'd" everyone else, we are way behind schedule.

Never mind, the swarm eventually settles and hubby launches into A Very Interesting Talk About Bees. I sneak inside, re-count the pikelets.

Great kids. Full of questions. We pass round a jar labelled BEE, another labelled WASP, each with its captive specimen. These are examined minutely and inspire gruesome tales: how "I got stung" and "I'm allergict."

Morning tea, a welcome break. The cordial evaporates faster than an iceblock in a suntan parlour and the stack of pikelets and honey disappear with equal speed into the circle of hungry mouths. We hear muffled appreciation, watch a mad rush to delve into lunch boxes in search of more food. (The dogs, cats, goats, etc, receive their share too.)

Happily replenished, the kids seat themselves, buzz with excitement as hubby announces that he will now show them some REAL LIVE BEES. Heady stuff this — Fearless Beekeeper removes the lid from a Real (baby nuc) Hive and with the air of a conjuror, withdraws a (tiny) brood frame dripping with R.L. BEES. Ooohhh!! The audience sucks in a collective breath and eager faces press forward as Fearless Beekeeper points out THE QUEEN! Half the kids decide to be beekeepers when they grow up. The other half has more sense.



Drones. Courtesy: Anthony.

Later we distribute pamphlets and little pink honey stickers and we are shyly but officially thanked for THE VERY INTERESTING TALK ON BEES AND ESPECIALLY THE NICE PIKELETS.

Kids, schoolbags, sweatshirts, sneakers, socks sunhats, stray sandwiches, Uncle Tom Cobbley and all, sort themselves out. As everyone says goodbye to eveyone else, we notice an epidemic of little pink spots breaking out. We wave until the last straggler disappears down the hill, and isn't it quiet?

The next week we receive a fat envelope of beautifully-handwritten letters with sentiments straight from the heart. "Thankyou for showing us all about the bees. The things I liked best were the tracter ride and the piklits."

The kids spend the rest of the term working on their Bee Projects; we are priviledged to read the results. Amazing what they remembered — what they didn't quite remember is even more amazing!

We learn that: "The bee collects pollen and puts it into sacks on its hind legs, with its other legs sometimes the bee will also collect the nectar." And, "When the bee sting comes out the bee is left with a hole in its beehide."

"The adult worker bee is called a jack," and "The worker bees have to clean the cells. If they aren't clean they have to do them again."

Everyone recalls that "It takes a drone about three seconds to mate with the queen." And someone writes: "You can tell a drone from a worker because a drone has bigger eyes." Talking of which — "A bee hive has to be watched so one of the workers has to go and watch the front of the hive . . . when a bee looks at its hive it gets 12,000 views all at once."

But our favourite quote has to be this one, short and sweet and so beaufifully expressed. "The shape of the larvae is like a curled up sosage with rincles." Wonder how he'd describe my pikelets?

EPILOGUE: Remember the BEE and WASP jars? A few weeks later we used the labelled tops to seal two jars of honey for a friend in town. When he returned the jars our friend told us he hadn't realised that wasps make honey as well! A case of, 'Wasp good for you is good for Bee'?

Classified Advertisements

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WORK WANTED

Keen 21-year-old with honeybee and bumblee experience wants work Nov. 1986 — March 1987 approx, with honey production, queen rearing, small seeds pollination, and leafcutter bees, if possible. Anywhere in NZ. Please reply as soon as possible : Michael Stedman, 57 Highsted Rd, Bishopdale, Chch 5. Tel. 597-406.

OTHER PUBLICATIONS

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Regularly publishing new information on bees, beekeeping and hive products, for beekeepers and scientists all over the world. IBRA Representative for New Zealand: T. G. Bryant, Apicultural Advisory Officer, Ministry of Agriculture & Fisheries, Private Bag, Tauranga. Catalogues of publications and details of journals and membership $0.55; specimen copy of journals: **Bee World** $1.10. **Journal of Apicultural Research** $1.10. **Apicultural Abstracts** $1.55. INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks, SL9 ONR, England.

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