



Beetalk June 2021

General info and news about bees

Hello and welcome.

Beetalk is a compilation of news from across the bee keeping word.

Its not affiliated to any beekeeping group so you wont get things like the next meeting and what we are doing and such like.

We hope that the articles provided will be useful to anyone interested in the a rewarding hobby and in some way we also hope that you may gain some pleasure in reading some of the article that are included.

Also we intend to include articles that may be helpful to anyone new to this wonderful hobby.

Being based in Lancashire it would be great for any contributions from Beekeepers from the county. But as stated above, please nothing about your association or group.

Hope you enjoy. And to everyone of our readers. Have a great Christmas and all the best wishes for the coming year, both in health, wealth and happiness, and may your beekeeping year be a great one.

Editor

If you have any articles that you think may be useful to have included in Beetalk.

Please e-mail them to the editor

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Talking Beekeeping .

Beekeepers often talk about the necessity to have calm and quiet bees, of good nature. How on earth do I achieve this?

Good tempered bees are the great search for Valhalla amongst beekeepers. As in “a’ things, there is a mids” – we may not all be able to breed well behaved, benign pussycats but neither should we have to put up with “veil bombers”, intent on chasing you out of the apiary and following you quarter of a mile down the road. Aggression or shall we call it assertiveness, does of course depend on colony strength, time of year, beekeeper handling technique and the breed of bee – the worst bees being the Africanised bees of S.

America (now spreading into the south of the USA) and the most benign being the yellowish *S. Italian ligusticas* sub species (*Apis Mellifera ligustica* – much favoured by the New Zealand beekeepers).

Most beekeepers would be able to go through a Nucleus or weak colony in spring, gloveless and with gentleness, without incident. However tackling a strong hive with three full supers and a high population in August is likely to need much more care. At this time of year the bees’ precious stores are, after all, under attack from all sorts of tykes – wasps, bumblebees, mice and beekeepers – and the bees know it. Here is where a certain amount of assertiveness is very necessary.

Very few guard bees will be seen at the entrance during a nectar flow. However when there is a lack of nectar, the guard bees appear, adopting their characteristic stance – standing on their four rear legs with forelegs raised and antennae outstretched. All incomers will be checked with a quick stroke of the antennae. When poachers appear wings will be deployed and mandibles opened ready for attack. Brother Adam believed that each colony (and its bees) had a characteristic smell derived from diet. Dr Butler (former Rothamsted research chief) agreed that there was a unique smell to each colony but maintained that it was genetically derived. At any rate the guards recognise strangers. If the strangers are “non-bee”, they recognise mammal breath, hair smell, sweat, cosmetics and other substances.

The techniques adopted by the North Vietnamese soldiers of detecting USA soldiers by the scent given off by their after-shave comes to mind. Bees also seem to take exception to dogs and horses which often have a sweaty aroma, but not interestingly cats – our cat used to lie in the sun on top of the hives with her paw nonchalantly draped over the front. It is often said that bees never use their stings to attack – only for defence. I think sometimes that our bees must have read the advanced military manuals where attack is considered the best form of defence! It is often asked why not just keep pure *S. Italian ligusticas* – the answer is that they are not good at coping with Scottish weather conditions; the queens tend to start laying too soon, running the bees short of stores when a prolonged patch of bad spring weather appears. There is however a fair bit of *S. Italian* blood in our Scottish bees and occasionally a fairly light coloured queen (and offspring) will pop out of the gene pool. Hybridisation with native north

European dark bees can of course produce some hybrid vigour, which may apply to temper as well as work ethic. Aggression is exaggerated by excessive production and perception of alarm pheromone in the worker bee, which is in turn affected by increased levels of juvenile hormone in the haemolymph (blood). This increased juvenile hormone level is mainly an inherited feature. However aggression is also much affected by the quality of the pheromones given off by the queen – this why re-queening an excessively aggressive colony can be so quickly effective (within a day). If you should encounter a colony that becomes almost impossible to handle, re-queening should be considered. How do we make a judgement of acceptable behaviour? Various attempts have been made at defining behaviour standards. These are inevitably, because of the variables mentioned above, a bit subjective; the normal method is to make a judgement of ‘following behaviour’ – how far do the bees follow, aggressively, after you close up the hive. Aggressively here means trying to sting, as opposed to just investigating. Typical following distances would be as follows: • No following, bees not concerned – good tempered bees – consider breeding from these stocks, other traits, such as productivity, health being equal. • 4 or 5 metres – a normal Scottish colony. • 100m or more – a bad tempered colony. • A kilometre – you’ve encountered some Africanised bees? The ‘following’ behaviour of each colony should be noted on your record card during each visit to gain an average perception of behaviour – also record weather and nectar flows and remember assertiveness will increase as the season progresses. If you have several colonies, the usual pattern is for there to be a small percentage of baddies – exclude them from your breeding programme. Aggressive colonies unfortunately can encourage ‘let-a-lone’ beekeeping, leading to swarming and potential propagation of the bad temper genes.

Manage your bees actively and deal with bad temper and breed from good temper. Form or join a bee breeding group at your local association and work with colleagues towards breeding reasonably good tempered bees. For urban beekeepers, temper should head the list of desirable characteristic. Do please keep records and make notes whilst you are at the hive. We have heard of one beekeeper who fixed a Dictaphone to his veil with the intention of getting his wife to type up fair notes when he got home – she refused because of the excessive bad language on the tape! A small notebook and a pencil is all that is needed.

As the Russian astronauts taught the Americans, no need for a space-proof (wax proof in our case) pen – a pencil works best. One of the problematic areas of breeding is that it is difficult to control the quality of the drones with which your well behaved queens will mate. Instrumental insemination is of course one way of achieving drone selection and Laidlaw’s ‘Queen Rearing’ is an interesting read.

However, even within the home apiary you can achieve ‘drone selection’ to a great extent by early feeding of good tempered colonies to encourage them to produce early drones. These early drones can be timed to reach maturity at the time that your new chosen queens are about to take their mating flights. If you are in a bee breeding group you can co-operate with other local groups, move your mating nuclei to their apiaries and simultaneously obtain some genetic diversity. Much can thus be achieved within your apiary by carefully recording behaviour and taking positive action by breeding from the best tempered colonies

FIND THE QUEEN.

"It's easier when you have experience" well, fine, but a lot of people don't have experience, so what do they do? Firstly do you need to find the queen? Only to mark her, move her or dispatch her. If you have eggs, she was there three days ago and that is usually good enough. If you find her when not seeking her, just look at her to see that she is whole, not minus a leg or two, and that she is behaving normally. To get away from the light she can move fast. For a shook swarm, follow Paul Mann's advice and you don't need to find her.

Yes, I do need to find the queen. Ted Hooper, one of the best bee-keepers of modern time, suggests the following; this is a summary: Check pp. 153:155 in the 2nd Edition of 'Guide to Bees and Honey'. If you don't have a copy, get one as this is still the best all round book on bee-keeping available. 'Open the hive quietly with as little smoke as possible.

Remove the first frame slowly and carefully; if it's stores, put it down and continue until you reach the first frame with sealed brood, then go back one frame and re-check for unsealed brood. If it has unsealed brood, start your careful examination of the combs here and concentrate on seeing the queen, nothing else. Now be swift;

As you remove the frame, look at the face of the comb now exposed in the brood box, often the queen is there. On the frame in your hands, check the edge, the centre, the edge again, turn the comb over and repeat the process. Go through this process quickly with as little disturbance as possible and you should find her on the frame where she was laying. If you have not found her, repeat the process, blowing on the clusters of bees or moving them gently with a finger or the back of your hand. Check the floor and walls as you do this. If you still have not found her try once more as above, but then stop.

By now the bees will be all over the place and need to settle. Still can't find the queen? Next day, or a later day, put an empty brood chamber next to the brood box that you wish to examine. Open up the hive take out the first pair of frames and put them together in the spare brood box a couple of inches from the wall. Do this with six frames, making three pairs. In the original brood box space out the remaining frames in pairs evenly across the box. Leave for two to three minutes. Now take a pair of frames at a time and open them like a book; you should be able to find the queen. 'Sieving for the queen' Really only to be used where you need to find the queen to remove her. Move the brood box to one side. Put a queen excluder on the floor and a new brood box above it. Put a swarm board, a piece of ply or similar, as a ramp from the ground up to the hive entrance. Shake and brush all the bees onto the swarm board. Check that there are no bees left on the combs and put the combs back into the brood box.

Put the crown board on the new brood box and leave for half an hour or so; a few puffs of smoke will encourage the bees into the hive. When all the bees are inside, lift off the brood chamber. The queen will be on the floor or on the underside of the queen excluder. If after all this, and you believe that the queen is still there, ask for assistance. A fresh pair of eyes, hopefully more experienced, may see what you have missed.

There is undoubtedly an awful lot of rubbish on Youtube, but if you are prepared to trawl through the site, there is the odd clip that shows queen that you can watch which gives you an idea of her size relative to workers, her movements on the comb, and help you pick up the 'jizz' of how she looks in the hive

honeybee
(*Apis mellifera*)



This is what she looks like compared to the other bees in the hive.

VARROA CORNER May/June

Hopefully you will be starting the summer with little or no varroa in your hives if you read my advice to count and treat in the February edition. Two of my colonies had natural mite drops (NMDs) of >0.5 daily in early March, so they both got an Apiguard in March. Very few mites dropped with this treatment and now they are dropping none! Keep doing monthly mite drop counts though. You usually find that mite drops in the first half of the season not too bad but get rapidly worse in June/July. May ushers in the swarming season and gives us a golden opportunity to treat any colonies that are significantly infested both in swarms you might collect or any of your colonies that choose to indulge this activity. If you have a significant infestation (NMD >2 /day) in a colony that is not putting up queen cells, I suggest you use the sugar shaking method weekly until they do. After all, you will need to be going through them every week to look for queen cells. Drone comb trapping is another method which involves putting a shallow (super) frame into the brood box, hoping they will draw and lay drone comb on the bottom and removing it 21 days later. As the mites prefer drone comb, it acts as a mite trap. You must be sure to remove it before the drones start hatching at 24 days or you will have created a varroa breeding comb! Ted Pope sent this picture of his water logged apiary! 21 My own experience of this however, is that the bees draw worker comb or a bit of both or fail to draw it altogether so I don't do this any more. I think it does work if you hit precisely the right time of year when they want to raise drones and the weather is good. I don't like removing naturally occurring drone brood as drones are the spermatozoa of the hive and queen mating problems are bad enough anyway. So, what do you do when your hive puts up queen cells? Altogether now--- You do an ARTIFICIAL SWARM! This process is described in all the books and summarised in the beeginners pages on page 25 of this edition. Basically it involves putting the old brood box with most of the brood (and attendant varroa mites) on a new stand and the old queen on one frame of unsealed brood in a new brood box on the old stand with any supers back on top. You now have the vast majority of mites in the old brood box where you can kill the little so and so's. Having no supers, you can put an eke and an Apiguard on them for 3 weeks by which time they should have a new queen. Don't forget to put the varroa tray to retain the Thymol vapour and give you an estimate of how many mites were present. Read it at weekly intervals and tot the counts up to give a grand total. Apiguard does not seem to affect queen rearing or mating as I have done it many times with good results. If the original colony was badly infested, say NMDs of 5/day or more, I would also remove and destroy the comb of brood you put back on the old stand with the queen 10 days later, when their phoretic mites will have gone into the sealed brood. This will effectively de-mite both hives and should see you through until the autumn. TREATING SWARMS is well worth doing as you usually have no idea how badly infested the parent stock was. I always feed swarms with 3-5 litres of syrup as a welcome present, to stop them absconding and to get them going as quickly as possible. A lot of beekeepers don't and seem to do just as well!. My usual treatment is one Apiguard for one week. Why only one week? Because there are only Phoretic mites present and no sealed brood yet. Before treating them you need to wait until the queen has started laying. This is because Thymol can make them abscond. If they have brood they won't. Older queens in prime swarms start laying within 3 days, virgins queens in casts might take up to 2 weeks or more to get mated and start. Put the varroa tray in and see how many mites they drop during the treatment week. If there are a very few you may have a varroa resistant strain. Look after it! If you have large numbers, up to 1000 is possible, these bees are not resistant but nevertheless useful. You can use Oxalic acid drizzled onto the bees as you do in midwinter as there is no brood but the problem is getting hold of the appropriate solution at this time of year. Claro Bees does not stock it now. Thorne's might have some or you might know someone who has some in their freezer. Probably best to stick to Apiguard.

All my remarks and suggestions are subject to the usual warnings that the bees don't read text books and can do anything unusual if they have a mind to and carry only a 92.73% guarantee of success! As always, and if you are a beginner particularly, if you are not sure, ask somebody. That is why it is so good to be a member of a Beekeepers' Association.

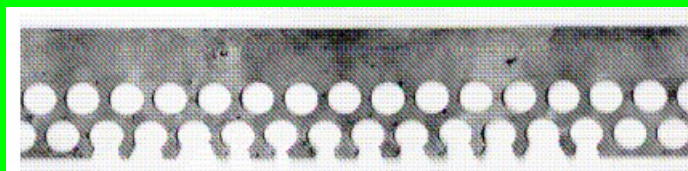
Editor

ADVICE FOR OUR MORE ELDERLY MEMBERS

Do not bend down to examine your hive until you have spotted something you can grab to pull yourself up again. Make sure you know what you are bending down for as, by the time you get there, you may have forgotten about it.

MODIFIED MOUSE GUARDS.

I have found that my mouse guards, slightly doctored, has a double effect. 1. gives space for the bees to remove dead bees and debris 2. prevents the mouse guard from pulling off the pollen loads when the bees have to force their way through the holes - especially in the important months of Spring and earlier, before the mouse guards are removed. I have used them for 25+ years and never had a mouse take up residence. The excess pieces are clipped off with small metal cutting pliers, or strong scissors, and then the sharp edges left are sanded with just two or three strokes. Not difficult. I thought this might be helpful for those who want to bother. The image explains it all.



WHEN TO REQUEEN?

There are all sorts of situations where a colony is in the process of re-queening. The two most common are during and after swarming or when a colony has been split to make increase. In most cases, a colony will successfully develop a new laying queen without input from you. But if this doesn't happen – and the most usual cause is poor weather during the period when the new queen is trying to make mating flights – then the beekeeper must know about this and take the necessary actions to (hopefully) recover the situation. Time is of the essence because every day the bees in the queenless colony are getting older and the likelihood of successful re-queening at a second attempt is rapidly diminishing. A week in your life is not a long time but it is about 20% of the life of a worker bee in summer! Developments within a colony follow quite a logical sequence and adhere to quite a strict timetable. It is important to know when various things happened and, unless you have much better time recall than I do, a written record is essential. The following is a series of logical steps describing the calculations, observations and beekeeping actions that cover all eventualities of the requeening process.

1. As with a (human) pregnancy, the first thing to do is to calculate a due date for a new queen to hatch. The development time for a queen is 15/16 days from a newly laid egg to emergence. It is very rare to see an egg in a queen cell and know that the bees will carry through with the queen-making process. The decision to raise a queen starts with nurse bees feeding a newly hatched larva with royal jelly, whilst simultaneously extending the walls of the cell. If a new queen is to develop properly this decision must be taken on Day 3 or very soon thereafter. If you see a cup with a very young larva in a pool of royal jelly then the decision has been taken and, unless bees decide otherwise, will become a queen in 13 days. There are only 5 days of feeding for a queen larva and the queen cell is sealed on Day 8 (worker cells are sealed on Day 9 and drones on Day 10). So if you see an open queen cell it is between 8 and 13 days from hatching. With a little experience, you can guess from the size and development of the cell roughly at what stage (which day) it is at. Once the queen cell is sealed it is more difficult to tell how old it is. You could sacrifice a surplus queen cell, breaking it open to see if it is still a larva (Days 8-9 old), a mush (Days 10-11) or a recognisable queen (Day 12 on). This will not necessarily give an accurate prediction because other queen cells may be of different ages – but you only need a rough estimate anyway. If it is an emergency re-queening situation, as when you make a split or due to death of the queen, the bees will usually start some queen cells using young larvae (not eggs) and these will be the first to hatch in about 13 day's time.
2. A commonly occurring situation is for the beekeeper to open a colony and find that it has already swarmed. You will be able to identify this condition by an obvious lack of bees (supers that were full of bees are now empty); there are no newly laid eggs and no queen, of course. You can identify the approximate date of swarming from the brood that is left behind. 23 If the swarm took off less than 9 days ago the youngest unsealed brood will tell you on which day the swarm occurred. If you assume swarming took place when the first queen cells were sealed, then 8 days minus the number of days since the swarm will give you a due date for the first queen hatching. Urgent action is now required if you are to avoid cast swarming in a few days time. You need to carefully search all the frames for queen cells and reduce their number to one (1 queen cell). You can play safe (or safer) and leave two queen cells if you are confident that they are of approximately the same age. Two queen cells side-by-side are usually the same age. Frames that have a lot of bees on them must be gently shaken to ensure you do not miss any queen cells and do not forget to look in those hidden corners down the sidebars.
3. If there is no unsealed worker brood in the hive then you are in deep trouble and the colony may already have cast swarmed or be about to do so. In this situation, you are likely to see hatched and unhatched queen cells, so what do you do – there may already be a virgin queen (or queens) running round the hive? Is she there or isn't she? Unless, by good luck, you happen to see a virgin queen, all you can do is thin the remaining queen cells to 1 and pray! At least you know when to look for a new queen starting to lay, which is about 14 days from now. In this situation you may find that several queen cells hatch whilst you are looking through the colony and deciding what to do. This is because your blunderings have distracted the guards that were keeping them in their cell for later use. You now may have several virgin queens wandering around in the hive. This is not as bad as it sounds because at least you know there is a queen (or queens) in the hive. What you do now is to destroy all remaining queen cells and close up the hive. These newly hatched queens will not be able to fly with a swarm for at least 24 hours by which time the bees will have discovered they have no back-up queen cells. The colony will choose from the available virgin queens and select one to go on to make mating flights and stability will be restored. Again you will be expecting a new laying queen in about 14 days.
4. Once a new queen has emerged she will take 2-4 days to start on her mating flights, assuming the weather is favourable. This is the time to NOT mess around with the hive unless absolutely essential. If you really must open the hive (and I find it is difficult to think of a sensible reason) it should be outside business (mating) hours, 9.00-18.00, and certainly not when drones are on the wing. After mating, which may take several days, depending on the weather, the queen needs time to set up her sperm bank and commence egg production. The minimum time from emergence to commencement of egg laying is about 10 days but it is normally not less than a fortnight (14 days). It can however, take a couple more weeks, but after that assume queenlessness and give a test frame of eggs.

REQUEENING.

If you are unfortunate enough to have a hopelessly queenless colony, you will have to intervene in order to save it. That is you must re-queen it..

How?

You have basically got a) give the colony a frame of eggs to rear a queen on; b) a good queen cell from another colony; c) a queen, virgin or mated laying. A frame of eggs. You should be able to beg a frame of eggs if you have no other colony of your own. There will be larvae on it as well, some of which will be too old to produce a good queen. This does not stop the bees from using them, so four days after giving the frame, remove all sealed cells, as they will have been built over 3 or 4 day old larvae (5/6 days from laying) which will not have had an adequate queen feeding regime.

A queen cell.

Queenless bees will not normally tear down a queen cell, but it can be given some protection if desired. A wire cell protector or simply sellotape round the sides will do. An unsealed cell should still be on its frame as they are still too fragile to travel, but a sealed cell is more robust, although it should be kept warm and not shaken about. It can be cut from a frame and put in a small container to travel. Interestingly, it is also possible to requeen a queenright colony, by using a sealed queen cell. This cell will definitely need protection around the sides but apparently queen cells are not torn down from the bottom. This procedure mimics natural supercedure and seems a good way of requeening a bad tempered colony, as you do not need to first find and remove the old queen.

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A queen. Bees most readily accept a queen of the age they are expecting, but a mated laying queen is generally welcomed by any colony. A colony which has just lost a laying queen through accident or because the beekeeper has removed her, will not be so keen on a virgin replacement. A colony which has lost its virgin on a mating flight will probably be happy with one. In all cases queen introduction is best done gradually, though some books will say 'run her in at the entrance' or 'drop her through the feed-hole'. Don't do this if she is valuable! Uniting a queenless colony with a queenright one, through newspaper, is the safest way of introduction. A queen introduction cage, plugged with candy (best, it takes longer) or paper, also works well. It is said to be even more reliable if the queen is alone in the cage, so if she has arrived in the post with attendants, they should be removed. (Do this with the cage inside a large, clear plastic bag, then she cannot escape, even if she gets out of the cage while you are releasing the workers. Do not wear leather gloves, use vinyl ones if you feel the need, but the workers are very unlikely to sting. (A queen that has travelled is no longer in laying condition and is more reliably introduced into a nuc of brood and nurse bees only. This can then be united with a queenless colony when she is laying well

BEGINNERS BIT.

Important!! After the extremely cold and wet April we have just suffered, keep an eye on the stores. More colonies starve at this time of year if the weather is bad' than in the winter. Thin syrup is generally acceptable in the spring, but if a colony is really on its beam ends, give something a bit thicker, to get more sugar into the hive quickly. If you should be unlucky enough to find bees literally starving and unable to move, spray or trickle thin syrup over them. The results are almost instantaneous, and you will then be able to put a contact feeder on to give the required feed. Contact feeders work better in cold weather than 'up-and-over' rapid feeders, as the bees do not have to leave the warmth of the cluster to use them. May and June. Presumably the weather will improve sometime-it can hardly get worse! You will then have to go straight into swarm prevention mode, with regular weekly inspections if possible. Why weekly? Because it takes eight days for a queen cell to be sealed and the prime swarm can leave at any time after that happens. It is far easier to do an Artificial Swarm before the prime swarm leaves, than to deal with a messy situation afterwards. Here is a brief reminder of the procedure. A spare hive with frames of foundation or comb is needed.

On finding swarm queen cells:

1. Move the hive to one side.
2. Put a new brood box, on a floor on the old site, remove a frame from the centre.
3. Put the queen, on her frame into the new box. Ensure there are no queen cells on it.
4. Replace the supers and close up the hive. This is the Artificial Swarm.
5. Go through the original hive (the Parent Colony) and remove all queen cells except one unsealed, well-fed one, in a protected position. (Not too prominent or hanging over the bottom bars)
6. Mark its position with a drawing pin on the top bar. Fill the gap with the frame from the other box.
7. Make sure that there are plenty of stores in this hive.
8. Close up. After five days go through both colonies and remove any new queen cells. Take great care of your chosen cell which will now be sealed. All the flying bees will return to the Artificial Swarm on the old site and concentrate on gathering nectar, as there is so little brood to feed. The queen has a large empty brood nest and far less bees to share her pheromones, so will hopefully give up swarming thoughts for that season. The Parent Colony will not be able to cast, as you have left only one queen cell. Hopefully the virgin will mate successfully and you can then either make increase or unite the two colonies together again, choosing which queen you prefer. At all times ensure that both colonies have enough stores. Swarm control time is a good opportunity to treat for varroa.

Other activities. If you are near a field of rape, the honey must be removed quickly or it will granulate in the comb and be a real pain to deal with. You can take frames when they are half capped, rather than waiting for fully capped, which would probably be too late unless the weather turns very hot. If the honey is the bees' only stores don't take it at all unless you are prepared to feed the same amount of syrup back. In any case, sugar syrup cannot have the same nutritional qualities to a colony rearing brood as does honey. Other honeys do not granulate quite so readily and can be left on the hive until it is convenient to remove them. As always, ensure there is enough honey in the brood box before taking off all the supers.

Editors Note.

(Beginners are sometimes surprised to learn that honey does not automatically appear in the hive for their consumption! It is not even guaranteed to appear for the bee's consumption, and frequently the beekeeper supplies the bees with food rather than the other way round!)

COOL BEES.

Scientists have long puzzled over why queen honeybees have so many mates so that their colonies teem with offspring with a range of genetic profiles. Now it seems that keeping cool on a hot day is one reason. Worker bees fan hot air out of the hive when the temperature gets too high and cluster together when it is too cool. In the magazine 'Science', Julia Jones. From University of Australia, Sydney, reports that the genetic make-up of worker bees determine the bees' individual thermostat. Some bees are more sensitive to high temperatures than others, so they start fanning slightly earlier or later than their neighbours. This variation keeps the nest at a comfortable temperature range and prevents the bees from constantly switching back and forth between heating and cooling. Workers with different fathers have different thresholds for starting to cool or heat the nest. The temperature in genetically diverse colonies varies significantly less than in those with a more uniform range.

Beekeeping articles from around the world

BEE HIVE HUMS RECORDED TO MONITOR INSECTS' HEALTH

The bees shivering their wings and abdomen as they go about their work in the colony generate the hum in a hive. Although bees lack ears, the hum is believed to be very important to the co-ordination of hive activity, because bees often modify wax comb to be a better conductor of vibration. Every job a bee does inside a hive makes a slightly different noise so by listening to the mass of sound within the hive we can find out a lot about its inner dynamics. Monitoring devices are being put in 70 bee hives across Scotland to record the hum the bees make while working and resting. Already the project has started to show the many different hums bees use to co-ordinate their work. Using modern digital signal processors and algorithms designed to recognise different hums the technology allows remote monitoring of the activity in the hives and an analysis of the different elements recorded. The monitor can give an indication of the strength of the hive, the fitness of the hive, how fast the hive is building, their intent to swarm and other such things. It is hoped that this technology will help the many scientists researching the problems that afflict bees, by giving them hints about what is happening before a colony fails. As well as helping beekeepers, the work of the hive monitor could also give great detail about a largely unexplored facet of the honey bee's life. Scientists believe Zombie Fly could be linked to sharp decline in honeybee numbers. Evidence has emerged that the phorid fly *Apocephalus borealis*, previously known to parasitize bumble bees, also infects and eventually kills honeybees and may pose an emerging threat to North American apiculture and cause Colony Collapse Disorder (CCD). The fly lays its eggs in the abdomen of the honeybee which then displays a 'zombie' behaviour, abandoning its hive to congregate near lights. They die shortly thereafter. On average, seven days later up to 13 phorid larvae emerge from each dead bee and pupate away from the bee. Using DNA barcoding, American researchers established that phorids which emerged from honeybees and bumble bees were the same species. Microarray analyses of honeybees from infected hives revealed that these bees are often infected with deformed wing virus and *Nosema ceranae*. Larvae and adult phorids also tested positive for these pathogens, implicating the fly as a potential vector or reservoir of these honey bee pathogens. Phorid parasitism may affect hive viability since 77 per cent of sites sampled in the San Francisco Bay Area were infected by the fly and microarray analyses detected phorids in commercial hives in South Dakota and California's Central Valley. Understanding details of phorid infection may shed light on similar hive abandonment behaviors seen in CCD. However, Professor David Goulson, of Stirling University, who has done specific research into the conservation of bumblebees, commented: "So far as I know, we don't have Phorid flies in Europe – I've certainly not heard of them attacking bees here. So I think that is one thing beekeepers don't have to worry about."

Cancer Research-identical genes but different development:

Cancer researchers in Heidelberg are studying honeybees to discover why cells with the same qualities behave differently. In the course of the study it has been discovered that queen bees differ in their chemical markers by around 500 genes from the workers they produce. The scientists hope, by exploiting this finding, they may obtain information about the growth of cancer cells, which possess the same genes as healthy cells, but develop divergent characteristics. The chemical markers with methyl groups are characteristics in genes, which have no influence on the development of the DNA constituents. The cells use these methyl groups to respond to changing environmental conditions. They play a decisive role in the development of the bee and could offer a starting point for a new cancer therapy. "The honeybee is an extreme example of differential development paths", stated Dr Frank Lyko of the Cancer Research Centre. The function of the larger, long-lived queen honeybee is to spend all of her life producing generations of new bees. The considerably smaller worker bees as opposed to this, collect food, maintain order in the colony and nurse and nourish the brood but are themselves sterile. It is the feeding that decides the future of the honeybee progeny. If the larvae are fed pollen they develop into worker bees. However if larvae are intended to become queen honeybees they are fed exclusively on lipid and protein rich royal jelly. Due to this enriched feeding the chemical markers are obviously affected. Australian scientists imitated the effects of this special food, by switching off the enzyme in the larval bees, which marked the DNA with the methyl groups. All of the larvae so treated developed exclusively into queen honeybees, without access to royal jelly. This was a clear indication that methyl marking is a decisive factor in the development and fate of honeybee larvae, in that it influences the activity of particular genes. Future cancer therapies based on these findings can now commence.

QUEEN BEE PROMISCUITY BOOSTS HIVE HEALTH

One of the questions that scientific beekeepers always ask themselves is "Why do queens mate with so many drones when they don't really need to?" My own research in the early nineties concerned the dynamics and parameters of drone congregation areas as I watched the drone comets form upon my artificial queen (and occasionally on some unfortunate but ☐terflies that passed innocently by!), I often wondered at the reason for it all. I put it down to the benefits of genetic diversity in the hive, But I found no absolute research which proved this. Now there is, and this research is important as you can see from the following conclusion made by researchers at Cornell University in the USA. "Queen honeybees who indulge in sexual surfeits with multiple drones, produce more disease resistant colonies than monogamous monarchs! According to a Cornell study, the curious promiscuity of queen honeybees has long perplexed apiculturists, especially since seeking out multiple mates takes more time and energy and puts the queen at greater risk of predation. Thomas Seeley, Prof. Of Biology and Chair of the Dept. Of Neurobiology and behaviour said "Even though just one male provides all the sperm that a queen needs for the rest of her life, queen honeybees go out on mating flights and obtain sperm from a dozen or more drones"

Researchers at Carolina State University tested the leading hypothesis that queen promiscuity improves hive disease resistance by boosting the genetic diversity of their offspring. It requires a nasty experiment where hives are inoculated with that most virulent disease, American Foul brood. It was found that the more genetically diverse colonies derived from multiple fathers, were significantly less affected by the disease several months later. These findings have implications for all beekeepers. Honeybee pollination services top \$20 billion annually in the USA alone. Could we boost the health of our colonies by providing a large pool of drones from healthy colonies, at queen mating time

CLIPPING QUEENS.

The subject of clipping the wings of queens has been briefly aired a few times over the years

The matter really deserves a more in-depth appraisal than it received on those occasions. With regard to the technique, it is only the forewings of a queen which are clipped. Ted Hooper clipped his queens' forewings at the level of the petiole, which is the waist-like narrowing between the thorax and the abdomen (ie. the wings were clipped quite short). Bob Manley clipped about a third from both the forewings of each queen.

The aim of clipping is to prevent the queen effectively flying and provided that at least a third of one or both forewings is removed the queen will be unable to fly. There is no exception to this rule! A clipped queen which attempts to leave a hive with a swarm or absconding colony will either stay on the hive, even re-entering it, or in attempting to fly away will spiral uncontrollably a short distance and get lost. The swarming or absconding workers and drones will mill around in the air near to the hive but will quickly return to their hive, whether the queen is there or not. It is the workers near to the hive entrance and fanning pheromone from their Nasonov glands which attract the flying bees back to the hive. A swarm of bees will not leave their original nest/hive and go to a new nest-site without an accompanying queen.

There are a couple of cautionary points to make. It is a fact that clipping an established queen's wings will not prevent the swarming urge developing in the queen's colony if conditions are right for that to happen. If conditions are met for swarming to occur then queen cells will be formed and virgin queens will subsequently emerge.

Clipping the queens' wings is just one part of a beekeeper's swarm prevention and control strategy. Clipping does not mean that all the other necessary aspects of that strategy can be ignored.

Most importantly regular inspections remain essential, even if required less frequently when the queens are clipped. Once queen cells are found the appropriate swarm control procedure must be implemented if the loss of secondary swarms (also called casts and after-swarms) is to be prevented. • it is most important that queens are not clipped until they have been inseminated and have established good egg-laying patterns.

Virgin queens must be able to fly on orientation flights and get to and from drone congregation areas during the first two or three weeks or so of their lives. Personally I usually clip and mark my new queens in their first summer when they have become established in three or five frame nuclei and when the colonies are still of a size making it easy to find the queens.

Any queen not marked at that time will be clipped and marked in the early spring of the following year when again the colonies are still relatively small and the queens easily found.

So, what are the advantages of clipping queens? - the prime swarm is effectively controlled and will not leave the hive for a new nest site. A beekeeper gets much more time to recognise when swarming is imminent and to implement swarm control measures to prevent loss of the after-swarms. This is particularly important if artificial swarming is a beekeeper's preferred method of a queen replacement programme and if the beekeeper wants to do his or her best not to lose £200-worth of bees.

The time when the first after-swarm with a new queen will leave the hive will be at least three days after the first virgin emerges and 11 to 12 days after the first queen cell is sealed (Winston). Clipping gets rid of the tedious situation of losing a prime swarm when only unsealed queen cells are found in the colony. It is frequently stated that the prime swarm leaves when the first queen cell is sealed. Any beekeeper with a few years experience knows that is not true.—the queen must be clipped if a beekeeper chooses to use a Taranov Board to artificially swarm a colony of bees. It was at the February meeting of the Nottingham Region that Gerry Collins eloquently described this method of artificial swarming as being more like the normal swarming process than that obtained by Pagden's or Demaree's methods because more younger bees are "selected" into the artificial swarm containing the old queen. C

Colonies in which the queens are clipped will not abscond Last year I treated my bees with Apilife-VAR®. They all had one treatment with no problems occurring, and I gave them the second dose just before going to France for a short holiday. This holiday coincided with the remarkable heatwave which occurred in September.

When we returned I found that three of my colonies had vacated their hives and had built extensive comb underneath the hives in the hive stand spaces. There was hardly a bee to be found in any of the three hives, but there was brood and stores in the new comb. However, the queens were clipped and at least I did not lose any bees.

It could be argued that even if the queens had not been clipped they would have behaved in the same manner and not flown to a new nest site, but there are plenty of examples of colonies absconding in these circumstances. Newcomers to beekeeping will find it easier not to clip queens until they have developed confidence in handling bees. However, there is no reason why these newcomers should not ask the suppliers of their bees to clip the queens for them. Maybe the suppliers will be happy to show the beginner how clipping is done. The clipping of queens' wings is a long established practice used by very many highly respected beekeepers. From amongst the real elite I have mentioned Ted Hooper and Bob Manley. Brother Adam was also obsessive about the clipping of the wings of his queens.

As a final point, it says in the BBKA Advisory Leaflet B1 –Bees and Neighbours - "Keep all queens clipped". N.B. Colonies in mini-nucs are notorious for absconding but obviously this is not a situation where queens can be clipped.

RE-USE OF GLASS JARS USE OF GLASS JARS

I recently heard that glass jars cannot be re-used for honey and treated the news with some scepticism. When I mentioned it to several other beekeepers, they gave me short shrift and said that they could understand that lids might present a problem, but they were, to a man (and woman) at a loss to see the sense with regard to easily sterilised glass. Undeterred in my quest for the truth,

I sent an email to the Food Standards Agency on January 26th and received the following reply, which confirms absolutely, that jars may not be re-used if the product they contain is to be sold.

I am sorry, but unfortunately the legislation with regards food contact materials will preclude the re-use of glass honey jars for any commercial food use, even following stringent cleaning.

A commercial honey producer is legally obliged to ensure their jars are fully compliant with legislation, and have an overriding requirement under the Food Safety Act to ensure the food they provide is safe.

Neonicotinoids Could Wipe Out Entire Colonies

A pair of studies relating to honey and bumble bees found that pesticides which affect the insects' nervous system could be in danger of wiping out entire colonies. Although strict limits prevent farmers from using insecticides strong enough to kill bees, the research from Stirling University raises fears that the chemicals could be indirectly putting them at risk by modifying their behaviour. Professor Dave Goulson of Stirling University, co-author of the study on bumble bees, said the continued use of the pesticides on flowering crops 'clearly poses a threat to their health and urgently needs to be re-evaluated.' Both research papers, published in the 'Science' journal, focused on a type of insecticide known as neonicotinoids, which were introduced in the 1990s and are one of the most widely used crop pesticides in the world. The chemicals, which influence the central nervous system of insects, pose a threat to bees because they spread to the nectar and pollen of flowering crops like sunflowers and oilseed rape. The Stirling study revealed that after exposure to imidacloprid, a type of neonicotinoid, bumble bee colonies – comprising bees, wax, honey, grubs and pollen – grew eight to 12 per cent smaller than control colonies, suggesting they were bringing in less food. They also produced far fewer queens, which are needed to establish new colonies after the winter, researchers said. The second study, by experts from the French National Institute for Agricultural Research found that honey bees exposed to a similar pesticide called thiamethoxam were two to three times more likely to die while away from their hives. Tracking devices planted on the bees suggested the effect was most likely due to the chemicals interfering with their homing instincts. Computer simulations suggested the effect was strong enough to lower honey bee populations to the point where they would may struggle to recover, the researchers said.

Varroa Mite Research Needs YOU!

A SCIENTIFIC team of Scots have won £250,000 to take self-destructing Varroa mite research into the field, and they are calling on SBA members to help them. Researchers from the University of Aberdeen and the National Bee Unit, part of the Food and Environment Research Agency, have worked out how to 'knock down' genes in the parasitic mite causing it to die. So far the work has only been done in the lab but now the team can take their work a step closer towards developing a product that could help beekeepers thanks to the funding from Biotechnological and Biological Sciences Research Council (BBSRC) and Vita (Europe) Ltd. Dr Alan Bowman, who is heading up the research, said: "Honeybees are incredibly important because of their pollination of flowers of both wild and farmed plants. But their numbers are seriously declining year on year and while there are probably several reasons for this, one of the most important factors is Varroa destructor that sucks the blood from bees and transmits serious viral diseases. "There is an urgent need to develop a Varroa-specific, environmentally friendly treatment or some method of overcoming the Varroa's resistance mechanism to existing treatments and that's what we are now working towards. Our new work will use 'Next Generation Sequencing' to thoroughly describe all the genes expressed in Varroa destructor. We know that we can successfully deliver dsRNA to a specific gene, but we now need to identify the right target." Importantly, the researchers need significant numbers of Varroa mites to carry out their work. Please help this critically important work by providing the University of Aberdeen team with brood comb infected with Varroa. To make it easy for beekeepers to forward Varroa infected brood comb frames, the research team will provide specialist packaging and cover postage costs, as well as covering the cost of replacement frames and foundation. Dr Bowman added: "We rely on honeybees to pollinate our crops and add variety to our diets, which is why there is a real need to tackle the problem of their decline. Having proved our concept in the lab we are delighted that this funding will allow us to develop our research to have real-world impact." Dr Max Watkins, Technical Director of Vita (Europe) Ltd, a major funder of the research, said: "Finding treatments that kill Varroa mites, but don't harm honeybees, bee products or the environment is not easy. The challenge is heightened because the relatively short life cycle of the Varroa mite means that resistance to a single treatment can often develop quite quickly unless beekeepers alternate treatments of different types." Dr Giles Budge, from the National Bee Unit at Fera added: "We are delighted to be in a position to progress this research." If you can supply brood comb frames from Varroa infected colonies, please contact: Dr Bowman at varroa-project@abdn.ac.uk or by phone on 01224 272877

The Apiary in April/ May. By now the colony should be going great guns, and the management that you do now will determine your honey crop. And the prospect of swarming comes along. Make sure that the colony has no shortage of space for brood or honey and be vigilant. Inspect every 7 - 10 days throughout May and June and check for queen cells. It is often said that drone brood or drones in a hive is a sign of swarming. This is not true, it is just an indication that the colony is building up normally. Queen cup building, practice or play cups that look like small acorns is a normal development and, providing that they are empty, this is not a sign that swarming is imminent. Neither does a cup with an egg in mean that a swarm is imminent, but it does mean that you should be extra vigilant. A queen cup with a pool of royal jelly and a newly hatched larva is a proper queen cell and without intervention the colony will usually proceed to swarm within 5-7 days, weather permitting. Just occasionally the bees will take down these early charged cells, but that is temporary; they will start queen cells again. You now have a few days to act to prevent a swarm, and you can do this by making an artificial swarm. You cannot stop swarming by simply taking down queen cells; The circumstances causing the swarm are still there and the bees will simply build more queen cells. There are many articles out there on artificial swarms, all very similar. Read up, pick one method, stick with it, and have a practice run with empty boxes. It is not as daunting as it sounds. Paul Mann's book "How to keep bees without finding the queen" gives a clear method where you don't have to find the queen to do a shook swarm, and pretty well every bee book will give a way of making a shook swarm. Essentially the bees are conned into thinking that they have swarmed. They have a brand new, empty house and as all their efforts are poured into making it good, they forget all else. An artificial swarm or a shook swarm are essentially the same except that a shook swarm is done early in the season before any queen cells appear. The artificial/shook swarm has other advantages as well. It gives the bees new comb getting rid of old; possibly contaminated comb; it rids the hive of all cell bound varroa mites, the only mites now being on the bees. A refinement is to put one frame of ready to be sealed brood into the new brood box in place of one empty frame four days after the artificial swarm. The mites are attracted to the brood and move from the bees into the cells. When the brood is sealed, remove and destroy it; this gets rid of close on all the mites. They will reappear from the odd mite still on the bees and from other bees joining the colony, but it knocks the mites back to the lowest level that is achievable, and no chemicals are involved. The artificial swarm also knocks back European Foul Brood and helps reduce Nosema. But primarily it reduces the chance of swarms buzzing off taking half of the foraging force with them, and so reducing your honey yield and depressing the bee-keeper who has seen them through the winter. We are stuck with varroa, EFB, Nosema, pathogens in comb and other nasties, but a shook/artificial swarm helps control these and also encourages and enthruses the bees. And when you have successfully done it, you feel a more confident bee-keeper.

VARROA CONTROL USING INTEGRATED PEST MANAGEMENT

1. INTRODUCTION This document is designed to give an overview of Integrated Pest Management for varroa, available treatments and sources of further information. The varroa mite is present in most colonies in the UK. If left untreated, it will usually cause the colony to collapse. Discovered in the UK in 1992, varroa was subsequently declared endemic and removed from the list of notifiable diseases. Following its arrival here, beekeepers began to use pyrethroid treatments such as Apistan or Bayvarol on an annual basis. The mite has responded in many parts of the UK by developing resistance to these routinely used drugs. Beekeepers are now aware that reliance on a single approach is not a long term solution.

2. INTEGRATED PEST MANAGEMENT (IPM) IPM means using a combination of different control methods at different times of the year in order to keep the varroa mite population to such a level as it causes no significant harm to a bee colony. IPM allows the beekeeper to choose the products or methods appropriate to them. It encourages careful monitoring so that treatments are used in line with known risk. (see section 3) A record should be kept of treatments applied. Chemical treatments have been used for a number of years in Wales, based on a combination of Apiguard (other thymol based treatments are now licensed) and oxalic acid. These offer a very simple means of controlling mite numbers effectively. It is particularly useful to beginners and should be seen as an important part of an IPM approach that can be adapted as necessary (see Sections 4 and 5.)

3. MONITORING As a general rule, mite populations should be monitored three or four times a year. The aim is to keep the total population below 1000 mites per honey producing colony. A number of methods are possible but counting natural mite mortality is the simplest and is highly compatible with treatments: i. ii. Put the (clean) insert under the mesh floor for 5-7 days in summer, up to 14 days in winter. Count the number of fallen mites at the end of the monitoring period and divide by the number of days to give the daily mite drop. iii. Multiply the daily drop by 100 in March, April, September and October, 400 in November to February, and 30 in May to August, to give a good estimate of the total number of mites in the hive. Uncapping drone brood regularly will give you a good idea of mite levels. When over 10% of pupae are infested, control will be required before the end of the season.

4. APIGUARD Apiguard is thymol crystals in a slow-release gel. It is generally used when daytime temperatures are over 15°C in order that the treatment is fully effective. Treatment with honey supers in place should be avoided to prevent 'tainting' the honey. It can, in an emergency, be used more or less at any time of the year. Equipment i. It is recommended that the hive is fitted with an open mesh 'varroa' floor with an insert for estimating mite numbers. ii. A hive with an open mesh floor MUST also have some sort of top insulation and the means of closing off all top ventilation. A cover board using 25mm polystyrene insulation is a good solution. (NB. Polystyrene insulation must be protected from the bees which will quickly chew holes in it.) iii. Some sort of spacer to provide clearance over the Apiguard tray is essential, either a deep crown board or a 25mm eke. An eke will be required where double brood or brood and a half is in place. Application A 50g foil tray of Apiguard is opened and placed directly on the top bars of the brood box, two weeks later this is repeated. If a double brood or brood and a half is in place, the tray should be positioned on the top bars of the bottom brood box with the second brood or super above it. Space for the tray should be provided by a mini eke. Late Summer i. Apiguard is usually used in late summer. Correct timing is particularly important in order to establish a healthy winter bee population. a. If there is a high population of mites building up in the hive (1500-2000) then treatment must commence as early as possible in August. It may even be necessary to take a premature honey harvest. b. If the number of mites is reasonably well under control (less than 1000) then treatment can be delayed until the end of August or beginning of September. c. If the hives are going to heather, it is safest to give a half treatment i.e. 1 x 50g tray of Apiguard in late July after removal of the honey crop. The second treatment should then be given after the return from the heather, around mid- September. Two staggered Apiguard treatments will be less effective than two consecutive ones but winter treatment with oxalic acid will deal with any mites that were in the brood. ii. The aim is to get the bees to completely clear the Apiguard tray in the 2 week treatment period. After 2 weeks, a second tray should be used. If the first tray is substantially cleared, all is well. If it is not, you should consider repositioning the trays for the second part of the treatment period. The first tray can be left in place or its remaining contents emptied into the second tray. It is good practice to remove the trays after 4 weeks, smearing any remaining gel over the top bars of the brood box and removing the mini-eke. For nucs and small colonies, half the quantity of Apiguard should be used. iii. The floor insert and an insulated crown board with no top ventilation should be in place throughout the treatment period. This is to keep the hive warm and encourage bee activity. It will also help to maintain a high concentration of thymol vapour. Fitting an entrance block is recommended to discourage robbing, as thymol will mask the hive scent. iv. The presence of Apiguard in a hive inhibits the taking of sugar syrup from the feeders at the top of the hive. The best strategy is to feed after treatments are completed and, therefore, time treatment before you plan to feed. v. When the treatments are carried out correctly, Apiguard should kill 90- 95% of the mites in the colony. This is significantly less than the 99% achieved with pyrethroid treatment (provided you have not got resistant mites), hence the potential need to carry out a follow up treatment with oxalic acid. Early Spring The natural mite drop should be counted and, if high (>8 mites per day), you may decide that treatment is necessary early in the year. One tray of Apiguard should suffice unless you get a large fall of mites when it would be necessary to use a second tray. This must be completed in April before supers are put on the hive. Chemical free control measures are possible during the season when supers are on: i. A shallow frame, drawn with worker comb, is placed about 1/3 into the brood box and the resulting space below will almost always have drone comb drawn down, laid up and capped. Cutting off and destroying the sealed drone brood every 2-3 weeks will remove a significant proportion of the breeding mites from the colony. Timing is critical as allowing the drone brood to hatch into drones will increase the mite population in the hive ii. At the same time the 'phoretic' mites carried on the body of the bee can be dusted with a cupful of icing sugar; this encourages grooming behaviour in bees. The mites will drop down through the mesh floor (insert removed) and be lost to the colony. These two methods complement each other well but will not remove sufficient mites to act as stand alone treatments. iii. Products such as 'Hiveclean' also encourage grooming behaviour. OXALIC ACID Oxalic acid is applied as 3.2% oxalic acid in 1:1 sugar solution using a 50ml plastic syringe with a wide bore needle. It has an efficacy of about 90% and will mop up mites that escaped the Apiguard treatment. It will also kill mites that have bred since then and those that have come into the hive from external sources. We recommend that you buy the solution ready made. It is available from all beekeeping equipment suppliers at reasonable cost and avoids the risks associated with preparing the solution from crystals. Oxalic acid solution is poisonous and should be used and stored safely. It should be very pale in colour with no crystals formed. If the solution is darker than straw colour or has crystals, DO NOT USE IT. It should not be stored for the following winter as there is a build up of HMF that is toxic to bees Timing Oxalic acid only kills mites that are living on the bees, in the phoretic stage. It does not kill mites in the brood. When there is brood in the hive, only about 15% of the mites are found on the bees and the majority (85%) found in the brood. It follows that oxalic acid works best on colonies that are broodless at the time of treatment. This is most likely to be the case in late December to early January. Removing the floor insert to ensure good ventilation will encourage the bees to have a broodless period. It is worth noting that oxalic acid will kill open brood. Oxalic acid can be used on both natural and artificial swarms that offer a broodless period. Application Treatment is best carried out when the weather is cold and dry when the bees will be well clustered. Only treat once and do not overdose. i. Fill a 50ml syringe with oxalic acid solution (ideally at blood temperature). ii. Open the hive to expose the clustered bees. iii. Trickle 3 - 5ml of solution between the frames along each seam of bees. A small colony may only require half the syringe or less. iv. Close hive. After the oxalic acid treatment has been completed any top ventilation should be closed and the floor insert cleaned and put in place. Mites will continue to fall for about 2 weeks after which the insert can be removed.

5. FURTHER INFORMATION For more detail on managing Varroa and IPM, as well a large range of other training manuals, advisory leaflets, fact sheets, best practice guidelines and varroa calculator visit BeeBase at www.nationalbeeunit.com and go to advice for beekeepers.

COMB CHANGING

Reasons for change Where there has been a drone-laying queen replace the comb as even when a new queen is introduced she will continue to produce drones in the now slightly enlarged cells Darkened/blackened frames created as a result of high usage with propolis and carapace deposits Post winter frames clogged with solidified honey (probably ivy honey) which limits the space available for the queen to lay eggs

Any comb where there has been infections such as Chalkbrood, Sacbrood and Nosema Brood affected by EFB or AFB will be dealt with under the instructions of the Regional Bee Inspector Benefits of change Minimises disease risk by removal of potentially viable pathogens Maintains cell size enabling development of full sized larvae and adult worker bees Enables easier colony inspection especially ability to see newly laid eggs Promotes good hygiene and general husbandry Methods of changing Partial frame replacement Most textbooks recommend removal of 2/3 frames each year but care must be taken not to split the brood as in early spring this could result in chilled brood. Also partial

replacement is not effective for disease control as new foundation is likely to become soon become infected nor is effective for Varroa management and does not greatly assist inspections other than on the new frames. Complete frame replacement This can be achieved by two methods (which will be the subject of a future article) either Bailey comb replacement of the Shook swarm method. The Bailey comb replacement method however, whilst it will produce some very nicely drawn brood combs, is not regarded as an effective disease control method and can take a long time (ie. weeks) for the bees to move into the new brood box and is not an effective Varroa control method. The

Shook swarm method, whilst it is a very cathartic process for the bees and results in the loss of developing brood, is a highly effective disease control method and is very effective for dealing with both Varroa developing in the brood cells and the phoretic mite surviving on the adult bee. The process however has to be carried out during a good nectar flow or careful feeding by the beekeeper. Ian and Jo were of

the opinion that this method was the most effective in contributing to hygiene and husbandry. Cleaning up frames Killing larvae/mites necessary to ensure that any Varroa mites in the brood cells are killed 48 hours in the freezer will be sufficient for both feed dead larvae to chickens or similar Remaining wax recovery can be achieved using either a solar extractor or a steam cleaner. N A I o Use minimal smoke - because smoke makes the queen run o Cause the minimum of disturbance o If you have double brood boxes, always inspect the bottom box first o Run through all the frames twice o The queen prefers the 'dark side' and will move quickly out of the sunlight o If you still can't find

the queen, remove the frames and place them in pairs. Then open each pair like a book and inspect o A warm part of the day is best - because there are fewer foragers. Scan the outside of the frames first and work in towards the centre (see opposite) o Stand back - and remember you are looking for 'something unusual' - this is often where the queen is located. 680 Wooden parts of the frame can be cleaned by scraping and torching or by boiling in such as a 'Burco boiler' with washing soda crystals added. This was a thoroughly informative presentation by two experienced and knowledgeable beekeepers well received by the 100 attendees whose questions were readily and

expertly answered.

POLLEN IN HONEY

Of course, this is all about the European Court of Justice ruling about GM pollen in honey.

Pollen grains are dispersed widely in the environment as well as being collected by bees on their foraging trips. Foraging activities and distances that bees will fly depend on population size and the needs of the colony as well as the availability of plants in the environment. The foraging range is usually 1.5 to 2km but sometimes 5km and rarely more than 6km up to even 10km. Some pollen is present in large amounts in nectar as from rape. Pollen from lime trees is under represented.

Pollen from flowers unattractive to honeybees can be dispersed by bumblebees entering flowers and the disturbed pollen may stick to honeydew secretions and subsequently be collected by bees and end up in the hives. (An example of this happening with potato flowers was cited by one of the researchers). It is possible for bees flying over fields of maize to have pollen stick to them as well as pollen to be blown into hive entrances under certain conditions. Pollen returned to the hive is stored close to the brood nest but bees walking over exposed cells of nectar may have pollen grains dislodged.

During the extraction process pollen will end up in honey. It becomes obvious that pollen from considerable distances and many sources can finish up in honey. Detection of GM Pollen in Honey Detection of GM Pollen in Honey EC regulations require labelling of food ingredients from authorised GMOs. Therefore honey will require labelling if it contains 0.9 per cent of pollen in relation to its total pollen content from authorized GMOs.

Where pollen comes from GM plants which are not authorised for food then there must not be, even in trace quantities, any present in honey. It is not possible to differentiate by a microscopic analysis between conventional and GM pollen. With current quantitative real-time PCR analysis the percentage of genetically modified DNA sequences can be measured in relation to species specific DNA. However, honey is a difficult matrix for DNA extraction because there are low overall amounts of DNA; pollen levels will vary in different honeys and there can be inhibition of the PCR amplification process.

There may also be DNA present from other plant sources in the honey. Initially the pollen yielded from an enrichment process is screened for the presence of genetically modified sequences. For unauthorised GMOs a qualitative PCR detection is sufficient. GMO presence with a general authorisation for food will have to be quantified and this is where difficulties arise. One presentation on honey analysis in Lower Saxony stated that the reference value for estimating the GMO content should be the total amount of pollen. Opinion was that a reliable quantitative estimation of the GMO content of the pollen fraction was not possible at present.

Incidentally, the European Food Safety Authority has now said that there are no human health concerns over MON 810 maize and have asked Monsanto formally to apply for food authorisation.

In other words, the law is an ass!

BEE KEEPERS' QUARTERLY.

The Bee Keepers' Quarterly published by Northern Bee Books is a somewhat weightier magazine that BeeCraft.

It carries articles on research; articles from bee keepers from around the world, (the editor lives and keeps bees in Messinias in Greece); articles on bee health; bee keeping development; the bee keeping season and much more besides.

Recent features have included colony losses; making a 'Langstroth' top bar hive; overwintering; new technology; Travellers' Tales and articles 'for the workshop', and there always a number of book reviews.

The normal cost is £28.00 pa, but through the Association it is just £18.00pa.

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If anyone would like to read a few back copies to see what it is like, you can contact me through the web site or at BADS-BKA@gmail.com.



Himalayan Honey Hunter coming home with his crop

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UK Honey Labelling Regulations

*Below is our simple advice on honey labelling.
For more detailed information - go to the website
of the Food Standards Agency. www.food.gov.uk*

- 1. The Word "HONEY" is required.*
- 2. The weight must be on the label - we will ensure it is the legal size and format.*
- 3. You can specify the area where the honey is produced. For example, Lincolnshire, Forest of Dean, Scottish Borders.*
- 4. You can specify the type of honey. For example, Heather, Borage. The honey must be at least 75% of that particular type.*
- 5. If you are selling the honey, you must have your name and address on the label. It does not need to be complete but you should be able to be found from the information.*
- 6. If you are selling the honey through a third party, you must have a lot number.*
- 7. New for 2003 You must have a best before date on the jar. We suggest 2-5 years from now.*
- 8. New for 2003 You must have a country of origin on the jar. For example - Produce of England, Product of Scotland, Harvested in Wales. Adding the country to the end of your address is not acceptable.*

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