

# Biodynamic Beekeeping

Questions put to  
Biodynamic Beekeeping Consultant  
Michael Weiler

1. What are the essential differences between conventional and Biodynamic beekeeping?

The most important points are:

- The biodynamic bee keeper aims to preserve the unity of the colony; he treats it as a complete organism not as separate parts.
- If the colony begins to split from itself by preparing to swarm we harness the power of this process, we do not suppress it.
- We use the power of the swarm process for renewal and all breeding.
- We do not make artificial nuclei or induce queen rearing.
- The bees build their own comb; we do not give them any foundation apart from little starter strips.
- We only use natural materials for the hives.
- We do not recycle wax in the hives.

2. Is this type of bee keeping new and how has it been developed?

Yes, you could say that this type of bee keeping is really new. It developed in response to the question: What do bees need in order to regain their vitality? What are the essential expressions of bee life? What is suppressed in conventional bee keeping?

3. Is it just for hobby bee keepers?

No, professional bee keepers also work with the biodynamic 'Demeter' standards. In Germany, most Demeter bee keepers own 50 to 100 hives or more. There is one bee keeper with more than 500 hives - it is his main profession. There is no reason why keeping bees in this way cannot be economically viable.

4. Do I need more expensive equipment for biodynamic bee keeping?

No, you don't need more equipment than is used in conventional beekeeping; in fact some equipment like queen excluders or that required for queen rearing is not needed.

5. Can I use my existing hives and equipment?

Demeter Beekeeping Standards require that the brood box and frames are large enough to accommodate all the brood as it grows without it being cut in two parts by the wooden frames of two brood boxes - for this reason we use large brood frames. Normally the brood area has a diameter of around 350 mm, seldom more. The brood area of a colony is elastic and adapts itself to the form of the space. To allow for this we need 10 to 12 frames of about 350 x 350 mm each. Larger numbers of smaller frames can be used, but only in one box. In Germany we generally use frames of at least 1200 cm<sup>2</sup>. This contrasts with the usual practice of using much smaller frames. Because most available frames are much smaller, we will need to modify them.

6. Are there any other limitations to commercially produced hives?

All hive parts should be made from natural materials (apart from essential fixings such as nails). The wood must be free of agricultural pesticides and Varroa treatment residues. This is particularly important if you get second-hand hives. Residues can be transferred and may then be found later in the combs.

7. You advocate leaving a space of 100mm between the brood box and the floor. Is this essential and what is it for?

The so-called "high floor" is not essential - but it is often used in Germany and not only in biodynamic or ecological beekeeping. It's helpful for working with the large brood box. If the colony is strong the bee cluster is able to hang down above the floor. This can in turn help to prevent swarming. In Germany the "high floor" also has a "back door" through which the bee keeper can take a look at the colony from below. In early summer this can be helpful for judging the right time to put on the honey supers - if the cluster is hanging down, it means that the weather is fine and lots of flowers can be expected. Another point concerns the litter falling down from the cluster - a high floor gives a greater distance between litter and cluster and makes it easier to monitor and observe how well the bees clean this floor. If the floor is mostly dirty, your bees are bad cleaners - this could be a reason for selection.

8. What is your view of top bar hives? Is there a place for them in biodynamic bee keeping?

Top bar hives could be used - if they have a large enough brood area. It is more a question of practicality and whether you want to be able to use honey supers and harvest honey in the normal way. If you are happy with that style of bee keeping there is no reason why you cannot keep bees in a top bar hive.

9. What about frames and foundation?

Foundation for the honey supers (if you use them) and starter strips, should be from Demeter beeswax - in the beginning you could use other organically certified beeswax if insufficient Demeter wax is available. You should collect your natural combs and wax from de-capping the honeycombs to use for this.

The frame wood must be free of all pesticide and Varroa treatment residues.

10. Do you need to wire frames in which Bees will build natural comb?

I don't use wires, but then I don't move my hives to different sites. Demeter Beekeepers are allowed to use wires (stainless steel) and I would say that if you move your hives it is best to use them - it gives more stability for the combs. But you have to make absolutely sure that the frames are hanging vertically in the hives, so that the wires can disappear completely in the natural comb.

11. Do you have any recommendation for spacing frames?

I find that in my brood boxes there is enough space for 12 frames with 35mm distance between combs (from middle to middle) There is only natural comb in my brood boxes and as these combs move a little bit more than combs made from foundation, you will sometimes find little waves. This means that you have to be careful when getting the

first comb out of the brood box when working the hive. For this reason I only use 11 frames in the space of 12. This enables me to press the frames together a little and increase the space between them and so avoid damaging the comb before lifting it out.

12. Do you recommend different spacing in brood chambers and supers?

I sometimes use thicker frames in the honey super (9 or 10 frames). It's possible and normally not a problem.

13. What method of frame spacing do you recommend?

I use Hoffmann frames. I find that the Hoffman side bar is helpful to the bees - it protects the brood area a little bit because it covers the brood nest from the outside space, helping to preserve warmth. Other bee keepers use different methods equally successfully - many ways are possible.

14. Can you use foundation in supers?

The Demeter guidelines allow the use of foundation in the supers, but it is a compromise. Most Demeter bee keepers don't use it. Just as with the brood frames, bees need something to climb up on to build the comb. You must either use foundation starter strips or give them two complete, built combs in the centre of the box and fill up with empty frames on either side.

You are allowed to use the fully developed combs again in the next years.

15. Demeter wax is a valuable commodity, how do you go about melting wax?

Demeter wax is a valuable by-product, much prized by the cosmetic industry, as it is free of the residues found in the wax from conventional hives. Between 500 to 1000 g of wax can be harvested per hive per year when keeping bees biodynamically.

A solar smelter is good for bee keepers who have only a few hives. With more hives you could use a steam wax extractor or really hot, soft water and then filter the wax through a fine sheet of cloth or muslin.

16. Do you have a recommendation for treating the outside of hives?

No, not really. I don't think it's necessary. Some carpenters say, wood without protection lasts 144 months while with protection it lasts 12 years! It's more helpful to prevent too much rain falling on the hive, so that it dries out quickly. If for aesthetic or other reasons you want to paint the outside of your hives the exterior coating should be an ecologically friendly paint with natural ingredients. Some bee keepers use linseed oil or a very hot mixture of linseed oil and beeswax. The inside of the hive should not be coated with anything at all and does not need protection.

17. Is there a problem with using metal in beehives?

It is perhaps good to be careful in our use of it. Some bee keepers in Germany don't use wires in the frames or metal roofs. They say that these wires produce an effect like an antenna. A radio engineer could measure the frequency of this antenna. It is anyway important to use stainless steel if we do use metal and certainly for nails and frame wires.

18. Does biodynamic bee keeping result in a lower honey yield?

Yes, especially when you first start you can expect a reduction of 30% - but this also depends on how intensively or extensively you have been working before.

19. Is it more labour intensive?

When you first start and before you have found a routine for biodynamic bee keeping, it will be more labour intensive. Later on you will find that there is a lot of work that you do not have to do; no artificial queen breeding, no breeding calendar and so on.

20. What is your approach to raising queens and why?

I only use queens, which have developed as part of the natural organic activity of the bee colony. This is the only way to produce a natural queen with all the attributes which nature intended. The bees have a much stronger relationship with a natural queen than with one, which has been introduced.

21. What do you do about swarm control?

All bee keepers know when swarming starts in their region. Once it starts you have to monitor your colonies for signs of the swarm process. First you'll find queen cups, later you'll find eggs or larvae in these cups. Now you can be sure that the process has started. The organism can stop this process at any time. The point of no return is when the prime swarm leaves the hive.

We remove any unneeded frames in autumn - maybe 2 or 3 if the brood box is big enough and put in dummy boards. Then in spring when the bees need more space we add empty frames so that on inspection we just need to check the new frame. We can learn to read the form of the newly built combs to see if the swarm process has started. If there are worker cells and a smooth line, all is OK. If it is wavy or there are a lot of drone cells or queen cups then something is going on and you will need to check further. If we wish to prevent the swarm from flying away or settling in a tree top, the following procedure can be used to hold back the swarming drive. Shortly before the swarm prepares to leave the hive (up to two days before if necessary) we open up the hive, look for the queen and take her out. Then we carefully sweep the bees off the comb in the brood chamber via a funnel into a swarm box until we have at least 1.5Kg of bees. Then we let the queen join them and place the box in a quiet, dark and cool place (like a cellar) for up to three days. The bees must be fed well during this time otherwise they will starve. After about three days the swarm is placed in a new hive with empty frames.

About 30% of colonies will swarm each year on average which is just enough for natural regeneration.

22. When hiving swarms on frames with only starter strips do you need to put a queen excluder beneath the brood chamber to prevent them from absconding?

I've never had this problem. No, we don't do that.

23. If you allow the bees to build their own comb without any foundation don't you get too much drone comb and too many drones and consequently more Varroa?

If the bees build their own comb after swarming they will only build worker cells for the

first 10 to 14 days. If you support this first building period with feeding, the new colony will build up 4 to 6 large combs with worker cells. That is all you and the colony need. After this the colony may do what it likes. Sometimes you will find 2 or more drone cell combs and a lot of drone brood; we do not have the experience though, that we have more Varroa because of this.

24. What do you recommend for the treatment of Varroa

We find that through our method of working with the swarm process and by using only natural comb the vitality of the colony is strengthened. In our experience however this is not enough in itself. Besides this we use organic acids (lactic, formic, oxalic) to control and regulate the mites. We do not use natural thymol since it leaves a residue in the wax. Within the bee colony it has an aroma which brings its own problems to the hive. I don't like to use organic acids and I hope that we will need them less and less. We must however remember that it has taken a long time to weaken the bees to a point where they don't have the vitality to heal themselves and it will also take a long time and need our assistance for them to have that vitality again.

25. Apart from it's possible effect on bees people advise against the use of formic acid because of its extreme unpleasantness for humans using it and because of its corrosive effect on all metal hive parts including nails. What is your experience of this?

As I said, I don't like to use these acids - but so far we don't find any other helpful medicines - and sometimes, medicines are bitter. Using cold water to get stronger is not always enjoyable - but you will only use it, if you are warm.

26. What about open mesh floors?

I don't use them myself, but some biodynamic bee keepers do.

27. What about drone removal?

To take out one full, capped drone comb in early summer helps to slow the increase in the number of Varroa Mites and delays the peak of the development of the population in summer time. But we only do this once and this method on it's own is not enough.

28. Is it not a waste of honey producing energy if bees have to produce all their own wax?

Nobody knows exactly how much energy a bee needs to produce wax. One natural Dadant size comb has a weight of about 50 g. This is not very much. If you weigh a comb with a sheet of foundation, you'll find that it's weight is more than 50 g. That means you don't save energy if you give foundation. Far from it! You actually waste energy by producing foundation.

Producing wax and building their own combs is an essential expression of bee life.

29. It seems that some of the problems with Colony Collapse Disorder in America could be because of the stress of migratory bee keeping. Is there a place for migratory bee keeping in the biodynamic approach? What guidelines can you give?

I don't think that normal migratory bee keeping is the main problem for bees. Migratory bee keeping is really a very old method - just look back to Ancient Egypt 5000 years ago.

The problem is intensive migratory bee keeping as practised by professional bee keepers in the USA who move their hives only for pollinating. This is a strong form of exploitation.

To move the bees once or twice a season is not a problem for the bees. Nevertheless - bee keeping without migrating is ideal, if there is enough forage in the area.

30. What guidelines do you have for feeding bees?

Feeding - the best thing is if the bees can over winter with their own honey without any feeding - there is no question that this is best but it is not always possible.

If feeding is necessary to supplement the stored food in the hive, we need a sugar solution. You have to use organically grown crystallised white sugar (not brown or dark sugar). I put 3 kg of sugar into 2 litres of water (or in proportion to the amount you need). To the sugar we add 10% of our own honey (to 9 kg of sugar you add 1 kg of honey); to this mixture we add some chamomile tea and a very little pinch of salt. You only need a small amount of these substances - if I prepare 100 litres of sugar liquid in this way (this would be nearly 75 kg of sugar and 7.5 kg of honey together with 50 litres of water) I would use one or two litres of a strong chamomile tea and maybe a teaspoon of salt (sea salt).

This mixture is suitable for feeding new colonies and nuclei as well as for autumn feed. It helps the bees to convert the sugar solution to a honey like substance.

31. How do you unite two bee colonies without disturbing the brood?

Quite a clean way to unite the bees is to sweep them down in front of another hive. Uniting the brood nests not only disrupts the colony but also has the danger of spreading disease. The newspaper method, where you put a sheet of newspaper between the brood boxes can also be used (the weaker on top of the stronger), later removing and melting one set of brood frames.

32. Could a 'shook swarm' be an appropriate way to convert a colony from a conventional hive to a foundation-less one, or should you always wait for the colony to show signs of swarming?

It is always better to wait for signs of swarming and for the swarm process to run close to the point of no return (the prime swarm). This colony will get the best possible start. Artificial swarms made before signs of swarming don't get the same power. If you do it in early summer it is possible but the first way is better.

To speed up the conversion rate of your colonies to natural combs, you can make an artificial swarm with the old hive after the prime swarm has left. The new queen starts laying eggs after the brood of the old queen has hatched completely. Once you have seen that the new queen is laying you can make an artificial swarm with all the bees and the new queen. You have to brush them into a swarm box or directly into a new hive with a few empty frames (only starter strips) situated on the old site. Then you have to feed them carefully for the following weeks until you find enough stored food in the combs. The new colony will build up new combs. When the frames are filled you can add extra empty ones.

33. Especially if you have a small number of hives, there will be times when a new queen from outside your own apiary will be required, how and when would you go about introducing her?

It is always risky to introduce a strange queen into a strong hive. But if it is necessary one way that works is after removing the queen to be replaced put a bit of liquid honey on the new queen and then put her on the entrance or on a brood comb. The bees will then clean the new queen and mostly accept her.

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