

Beekeeping FAQs

As a moderator on the Beesource bee forum, I hear these questions often, so I thought I would address them here. I will try to add more from time to time.

Can queens sting?

I've been handling queens off and on since 1974. Since I started rearing queens in 2004 I've been handling hundreds of them a year. I've never been stung by a queen.

Jay Smith, a beekeeper who reared thousands of queens a year for decades, said he was only stung by one once and he said she stung him right where he had squished a queen earlier and he thought she thought it was a queen.

Can they? Yes. Will they? Extremely doubtful. The few people who I've met who say they've been stung by a queen say it didn't hurt as bad as a worker.

Dead bees in front of the hive?

With the queen laying 1,000 to 3,000 eggs a day and bees living about six weeks, there are always some dead bees in front of the hive. Often you don't see them because they are in the weeds or grass. A lot of dead bees (piles of them) might be cause for concern because it may be a sign of pesticide poisoning or some other problem. But some are normal.

Frame spacing in supers and brood nests?

This question seems to come up a lot. The question is usually something like "should I put 9 or 10 frames in my supers?" or "should I put 9 or 10 frames in my brood boxes?"

My answer for the brood boxes is that I put 11 in. At least in a ten frame box. I shave the ends down in order to do this and I do it because it's the spacing the bees use if you let them. But 10 will do. They should be tightly together in the center, and not spaced out evenly. They are already further apart than the bees would prefer and spacing them any further usually results in burr comb or even an extra comb in between the frames. The theory of doing 9 in the brood box is that there will be more cluster space, less swarming and less rolling of bees. The reality, in my experience, is that it requires more bees to keep the brood warm, the surface of the combs is more irregular and this causes more rolling of the bees when removing frames. This irregularity is due to the fact that honey storage comb can vary in thickness but brood comb is always the same thickness. The results are that where they have honey and you have 9 frames, they have extra room to fill and they fill it with honey. If they have brood then it is not as fat as the honey. I tried 9 frames in the brood nest and was not impressed. I now have eight frame boxes and I have 9 frames in them (which requires shaving the end bars down). At 11 in a ten-frame box you get very flat consistent comb and you get smaller cell size more easily. My answer for the supers is that once they are drawn you can put 9 or even 8 in the ten frame supers with good effect as the combs will just be thicker. But when it's bare foundation, the bees will often mess up the comb if you space it more than ten. Ten frames of bare foundation should always be tightly together in the middle of either a super or a brood box in order to prevent the bees from attempting to build a comb between the foundations instead of on them. With eight frame boxes you can do seven drawn combs or even six. A related issue is messed up combs.

Why do the bees mess up the combs?

Some of this is genetics. Some bees build straight parallel combs no matter what you do. Some will burr things up every which way no matter what you do. But there are things you can do to stack the deck.

Some of it is giving them the freedom to mess it up. Push all the frames tightly together. Those spacers on the frames are there for a reason. Use them. Do not space the frames evenly in the box. When you have undrawn foundation, do not space less frames in a box. Bees, if they don't like your foundation (and they never do really) and if you give them the room (by spacing the combs more than 1 3/8" (35mm) apart) will try to build a comb between two frames rather than build it on your foundation. So pushing it together makes the space between the foundations small enough to discourage this, as it's not enough room for a brood comb.

Some of it is that they don't like you deciding their cell sizes etc. They will build their own comb with much more enthusiasm than they will build foundation. So they try to avoid building on the foundation. One solution is to stop using foundation and go foundationless. Another is to get foundation that is closer to what they wanted to build. 5.4mm standard foundation is much larger than typical natural worker brood comb. 4.9mm is closer.

They usually don't like plastic much. The solution to getting them to draw it is to give it to them when they need to draw comb. Don't give them wax foundation mixed with plastic foundation or they will ignore the plastic and draw the wax. Buy the wax coated plastic so they will accept it better. Spray some syrup on it or syrup with essential oils like Honey Bee Healthy, to cover the smell of the plastic. Once they've licked it clean they tend to accept it better.

Sometimes they will still mess it up.

How many cells on a frame?

Deep frame of 5.4mm foundation 7000

Deep frame of 4.9mm foundation 8400

Medium frame of 5.4mm foundation 4620

Medium frame of 4.9mm foundation 5544

How do I clean up used equipment?

Used equipment has been a controversial subject for more than a century. AFB (American Foulbrood) is still an issue but used to be an even bigger issue. The only real concern about used equipment is AFB. AFB spores live virtually forever (longer than us anyway) and infected equipment is probably one of the contributing factors to getting AFB. Many people with AFB just burn the equipment. Some scorch it. Some boil it in lye. Some "fry" it in paraffin and gum rosin.

So the issue usually is that you have at your disposal (either free or cheap) used equipment. Cleaning up from mice isn't too complicated. Just leave it out in the rain until it smells ok. Cleaning up from wax moths is just cutting out the webs (which are hard for the bees to remove) and scraping off the cocoons. If combs are dry and brittle, let the bees fix them, they will be fine. If they are dusty, the bees will clean them up. The real risk is AFB. If you have old brood comb, I would look for scale in the bottom of the cells which would indicate AFB. If there is scale, you'll have to take the threat of AFB pretty serious. Some would just burn at that point. So, assuming you find no scale then what do you do? I can't tell you what to do as it is always a risk and if you get AFB I don't want you blaming me. But I'll tell you what I do. I've always gotten mine from sources I believed to be honest, usually very cheap or free and just used the equipment with nothing done to it. I've never gotten AFB in my hives.

Now that I'm dipping my equipment, I would dip any used equipment, since I have the wherewithal.

How do I prepare the hive for winter?

The problem with answering this question is that it will depend on your location. There is a big difference in the issues faced by a beekeeper in South Georgia or Southern California, compared to one in Northern Minnesota or Anchorage Alaska.

So I can only give a generalization and call on my own experience in the middle of the country. I'm in Southeast Nebraska and used to be in Western Nebraska and the front range of the Rockies. So this advice is pretty useful in that range of climates.

Reduce the space. There is no reason to have extra empty space in a hive in the winter in the North. Any box that is empty combs or foundation I would pull off for the winter.

Block the mice. Mice can devastate a hive. Make sure if you have bottom entrances that you have mouseguards on. A piece of #4 (a wire every 6mm) hardware cloth works well for this.

Remove excluders. If you use excluders they need to be off before winter sets in. A queen can get stuck on the other side of the excluder and die in cold weather.

Make sure you have some kind of top entrance. I like all top entrances and no bottom entrances, but regardless you need at least a small one for release of moist air so you don't get condensation on the lid and so the bees can get out when the snow is deep or there are too many dead bees on the bottom board.

Commonly people ask if the heat won't all escape. Heat is seldom the issue it's the condensation dripping on the bees that usually kills bees in winter.

Make sure they have enough stores. In my part of the country with Italian bees you need the hive to weigh about 150 pounds (68kg) total for good insurance for the winter. They probably will get by on 100 pounds (45kg), but they could also burn through that in the spring rearing brood and come up short. Any less than 100 pounds (45kg) would worry me a lot. The time to feed is when the weather is still warm as they won't take syrup after it gets cold. Once you hit the target weight there is no need to feed anymore. Usually a 150 (68kg) pound hive around here is two deep ten frame boxes, or three medium ten frame boxes or four medium eight frame boxes, mostly full of honey.

I have only wrapped once and was not favorably impressed, but if it's the norm for beekeepers where you live you might want to consider it. The normal wrap is 15# roofing felt (100 square feet weighs 15 pounds) as it provides some heat gain on sunny days. I found this sealed in too much moisture. Other wraps are wax impregnated cardboard that leaves an airspace around the hive. This seems like a wiser choice for the moisture issue.

Avoid the temptation to think that heating a normal strong hive is helpful. It's really not. Thick insulation is not either. Don't move them indoors, they need to fly. Don't pile bales of straw around as it will just attract the mice. A wind break is nice if you can provide one.

How far do foragers fly?

According to Brother Adam he had bees he knew flew five miles (8km) or more to gather Heather nectar. According to Huber, he marked workers, took them different distances and released them and looked for them to turn back up at the hive. He said they always found their way back when they were 1 1/2 miles (2.5km) from the hive, but past that they didn't. He also says, and it makes sense, that it would depend on the foraging available. It also seems to vary by bee size. Brother Adam says his native *Apis Mellifera mellifera*, which were smaller, flew the five miles (8km) to get the Heather, but the Italians he replaced them with, which were larger, would not. Dee Lusby says her small cell bees, after regression, came back with totally different pollens than before and that based on the blooms and the spread of flora that depend on pollination she's confident that the small cell bees forage much further than the large cell bees. This would be consistent with Brother Adam's observations.

How far do drones fly to mate?

I don't think anyone really knows. They fly to DCAs (Drone Congregation Areas) and there are certain topographical clues they look for as well as pheromone trails in order to find one. DCAs are usually at a place where a tree row meets a tree row. The research seems to show that drones fly to the nearest DCA. The

location, being dependant on the terrain and the amount of other hives nearby, the distance is hard to predict. Most of the scientists, however, say they fly, on the average, a shorter distance than the queens.

How far do queens fly to mate?

As with many questions with bees, it's such a variable thing to start with; it's hard to say. According to Jay Smith, who tried an island for his mating yard, and he says the queens flew at least as far as two miles (3.2km). Some estimates I've seen are as much as four or five miles (6 to 8km). But I've also heard beekeepers who say they've seen matings (as evidenced by drone comets and the queen returning to the mating nuc) that occurred right in the beeyard.

How many hives can I have on one acre?

The problem with this question is it assumes the bees will stay on the 1 acre. They will forage the surrounding 8,000 acres (32 square km).

How many hives can I have in one place?

This is a difficult question to have a distinct answer to. Even in a given place it varies from year to year depending on the nectar flow which depends on the timing of the rain and the early and late frosts. In a place with really good forage (like the middle of 8,000 acres (32 square km) of sweet clover) it may be almost impossible to have too many hives there during a flow. But in general most rural locations in areas where there are the typical farm crops of corn, beans, alfalfa etc. about 20 hives in one place is usually the economic threshold where after that the competition will cost you honey. Try increasing the number of hives gradually until you see too much competition and honey crops decreasing.

How many hives should a beginning beekeeper start with?

The standard answer is two. I'll say two and a half to four. Half being a nuc. Less than two and you don't have resources to resolve typical beekeeping issues like queenlessness, suspected queenlessness, laying workers etc. More than four is a bit much for a beginning beekeeper to keep up with.

How much honey will my hive make?

Some years 200 pounds (90kg). Some years they will eat 200 pounds (90kg) of sugar and make nothing. Most likely, most years it will be somewhere in between. It is impossible to say.

Locating hives?

"Where should I put my hive?" The problem is there isn't a simple answer. But in a list of decreasing importance I would pick these criteria with a willingness to sacrifice the less important ones altogether if they don't work out:

Safety. It's essential to have the hive where they are not a threat to animals who are chained or penned up and can't flee if they are attacked, or where they are likely to be a threat to passerbys who don't know there are hives there. If the hive is going to be close to a path that people walk you need to have a fence or something to get the bees up over the people's heads. For the safety of the bees they should be where cattle won't rub on them and knock them over, horses won't knock them over and bears can't get to them.

Convenient access. It's essential to have the hive where the beekeeper can drive right up to it. Carrying full supers that could weigh from 90 pounds (41kg) (deep) down to 48 pounds (22kg) (eight frame medium) any distance is too much work. The same for bringing beekeeping equipment and feed to the hives. You may have to feed as much as 50 pounds (23kg) or more of syrup to each hive and carrying it any distance is not practical. Also you will learn a lot more about bees with a hive in your backyard than a hive 20 miles (32km) away at a

friend's house. Also a yard a mile or two from home will get much better care than one 60 miles (100km) from home.

Good forage. If you have a lot of options, then go for a place with lots of forage. Sweet clover, alfalfa being grown for seed, tulip poplars etc. can make the difference between bumper crops of 200 pounds (91kg) or more of honey per hive and barely scraping a living. But keep in mind the bees will not only be foraging the space you own, they will be foraging the 8,000 acres (32 square km) around the hives.

Not in your way. I think it's important the hive does not interfere with anyone's life much. In other words, don't put it right next to a well used path where, in a dearth and in a bad mood, the bees may harass or sting someone or anywhere else where you are likely to wish they weren't there.

Full sun. I find hives in full sun have fewer problems with diseases and pests and make more honey. All things being equal, I'd go for full sun. The only advantage to putting them in the shade is that you get to work them in the shade.

Out of the wind. It's nice to have them where the cold winter wind doesn't blow on them so hard and the wind is less likely to blow them over or blow off the lids. This isn't my number one requirement, but if a place is available that has a windbreak it's nice. This usually precludes putting them at the very top of a hill.

Not in a low-lying area. I don't care if they are somewhere in the middle, but I'd rather not have them where the dew and the fog and the cold settle and I really don't want them where I have to move them if there's a threat of a flood.

If you live in a very hot climate, mid afternoon shade might be a nice to have, but I wouldn't lose sleep over it. In the end, bees are very adaptable. They really don't care, so make sure it's convenient for you, and if it's not too hard to provide, try to meet some of the other criteria. It's doubtful you'll have a place that meets all of the criteria listed above.

Planting for bees.

Beekeepers always seems to want to know what to plant for their bees. Just make sure you understand that your bees will not just work the flowers on your land. They will be foraging a 2 mile (3.2km) radius which is 8,000 acres (32 square km). It's difficult, unless you own that 8,000 acres (32 square km), to plant enough to make a crop. But it's not hard to plant things that will fill out the year for the bees. The times of need in the hives is early (February to April), late (September to the killing frost) and during drought (which is usually mid summer around here and requires plants that will bloom when there is little rain). So I would focus on plants to fill those gaps. A variety of honey plants in general will tend to fill more gaps than focusing on only one or two plants. It certainly doesn't hurt to plant some sweet clover (both yellow and white as they bloom at different times) and some white Dutch clover and some birdsfoot trefoil and some borage and some anise hyssop and some tulip poplars and some black locust, but these don't tend to fill those early and late gaps, but do tend to make some honey and may fill a gap. Early plants that provide pollen are red maples, pussy willows, elms, crocuses, redbud, wild plums, choke cherries and other fruit trees. Dandelions are always good to have around. You can pick the dried heads from people whose lawns are full of them. Just pluck them and put them in a grocery sack and take them home and scatter them. Chicory and goldenrod often bloom in a drought and will bloom usually from about July until a killing frost. Asters are a good late blooming plant. The main thing to keep in mind, though, is that you're just trying to fill the gaps, not trying to create a crop.

Queen excluders?

The use of queen excluders has been controversial among beekeepers since the early days of their existence. I quit using them very early in my beekeeping. The bees did not want to go through them and they did not want to work the supers on the other side of them. They seemed very unnatural and constraining to me. I think they are handy to have around for things like queen rearing or a desperate attempt to find a queen, but I don't commonly use them.

The reasoning for using them:

The queen will be easier to find if I can narrow down the area I have to look. But I find the area I have to look is pretty narrow. I seldom find her other than where the highest concentration of bees is and that usually narrows it to a few frames. But this is a good reason if you need to find the queen often. In queen rearing this can be once a week or so and a queen excluder can save you some time.

Preventing brood in the supers. The only reasons I've seen a queen lay in the supers are, that she ran out of room in the brood nest, therefore she would have swarmed if she couldn't, or she wanted room to lay drones and there is no drone comb in the brood nest. If you don't want brood in the supers, give them some drone comb in the brood nest and you will have made great strides in this regard. Also, if you use all the same size box, you'll have no problem if she lays in the "supers" putting those frames back down in the brood nest, and if you use no chemicals, you can steal a frame of honey from there to fill out your super.

If you want to use them

If you want to use an excluder, remember you have to get the bees going through it. Using all the same sized boxes, again, will help in this regard as you can put a couple of frames of open brood above the excluder (being careful not to get the queen of course) and get them going through the excluder. When they are working the super you can put them back down in the brood nest. Another option (especially if you don't have the same sized boxes) is to leave out the excluder until they are working the first super and then put it in (again making sure the queen is below it and the drones have a way out the top somewhere).

"Beginning beekeepers should not attempt to use queen excluders to prevent brood in supers. However they probably should have one excluder on hand to use as an aide in either finding the queen or restricting her access to frames that the beekeeper must want to move elsewhere" -The How-To-Do-It book of Beekeeping, Richard Taylor

Queenless bees?

The question comes up all the time on beekeeping forums: "Are my bees queenless?" The symptoms leading to this question vary greatly and the time of year for the question varies greatly, but it is a very important question to get an answer to and is sometimes remarkably more complex than it appears.

The most likely cause for the question is a lack of eggs and brood. Many beginning beekeepers couldn't find a queen if you marked, her, clipped her and put her on one frame for them to find her, and even an experienced beekeeper in a well populated hive on a given day may have trouble finding one. So not seeing her doesn't prove anything. Not seeing eggs and brood is an important clue, but it doesn't mean that there is not a queen. It means there is not a laying queen and has not been one for a while. But there very well may be a virgin queen that is not laying yet.

Let's do a bit of bee math. If you accidentally kill a queen today, how long before you'll see eggs from a replacement raised by the bees? How much open and capped brood will there be left by the time you see eggs from the new emergency queen? The answer is none. If bees lost a queen today, and started from four-day-old larvae (four days from the egg) to raise a queen, it would be another 11 days before she emerged. Another week for her to harden and orient. And another week to get mated and start to lay. That's approximately 25 days (give or take a week). In 25 days every egg has hatched, been capped and emerged. There is now no brood left in the hive, but, in this case, there is a queen.

The problem is if the new queen flew out to mate and didn't make it back, and the hive is truly queenless, the hive looks the same. No eggs, no brood, not even any capped brood. So how do you answer the question? You give them a frame of brood with eggs and see what they do. If you have a queen cell in a couple of days, then they are queenless. You can either get a queen for them or let them raise that one.

Another problem is when you find a few eggs and a few larvae and they are very scattered. This is sometimes due to laying workers but the bees have still kept up with removing the drone eggs from the worker cells, except for a few. But what if it's a new queen that is just starting to lay? Usually she will lay in a patch and not scattered all over. Laying workers require a lot more effort to deal with.

One way to get a clue as to whether a hive is queenless is listening to it. If you don't know what a queenless hive sounds like, try catching a queen and removing her from a hive and then wait a few minutes and listen. The hive will set up a roar. This is sometimes called a "queenless roar".

Another clue that there probably is a queen who is about to start laying, is to look for a patch of empty cells surrounded by nectar, in the cluster, where they have cleared a spot for her to lay.

A grouchy hive is often a sign they are queenless or a lethargic hive. But you still need to look for eggs and larvae.

The bottom line is that queenlessness is difficult to diagnose definitively. A combination of several of these symptoms (lack of eggs and brood, queenless roar, lethargy or anger) tends to convince me. But only one or two, I give them a frame of open brood with eggs and see what happens.

Of course this illustrates why you need more than one hive.

Requeening.

There are several questions to do with this. One is "how often should I requeen?" Beekeepers have many opinions on this ranging from twice a year to never. I tend to let them requeen themselves, but then I have a handle on swarming and I do requeen if they are too defensive or are not doing well.

The second question is "how do I requeen?" This may involve several questions such as "what do I do if I can't find the old queen?" or "how do I know they will accept the new queen?"

Remove the old queen. I have not had good luck releasing a queen if they have a queen. About the only way to do this is if you raise your own queens and you introduce a cell or a virgin queen with a lot of smoke to cover her appearance in the hive. That way it is more likely to be perceived as a supersedure by the bees. Otherwise you need to remove the old queen in order to introduce a new laying queen. If you absolutely can't find the old queen and you absolutely think you need to introduce the new one, I'd use a push in cage. All in all it's the most reliable method anyway.

A standard candy release usually works fine if there aren't any complications (such as laying workers, angry hive, already rejected a queen, been queenless a long time, can't find the old queen etc.). This is where you uncork the candy end of the cage, (or in the case of the California cages, you add the plastic tube that has the candy in it) and you put the cage in the hive and wait for the bees to eat the candy and release the queen. It is advantageous to acceptance to release the attendants in the queen cage, but if you are a beginner you may find that intimidating. A Queen Muff (from Brushy Mt.) will help much in this as you can do all of your manipulations in a situation where the queen can't fly off on you. If you catch the queen and put her head in the cage she will usually run back in.

Push In Cage. This is the most reliable release for a laying queen. The concept of this is to give the queen some newly emerged attendants, who will accept her since they have never had any other queen, some food and a place to lay. Once she is a laying queen with attendants the hive will usually accept her without protest. Making a Push In Cage. Most people make these about 4 inches square (10 cm). I prefer to make them bigger. The larger they are the easier it is to get some honey (so she doesn't starve) some open cells (so she has a place to lay) and some emerging brood (so she has attendants). I like mine about 5 by 10 inches (12.5cm by 25cm). Cut some #8 hardware cloth (8 wires to an inch or 1/8" wire cloth) 6 1/2" by 11 1/2" (about 16cm by 29cm). Pull off the first three wires all the way around leaving 3/8" wires sticking out with no cross wires. This is to push into the comb so that the bees can't get under easily. Now come in 3/4" from the corners (three more wires) and make a cut 3/4" in (3 more wires) on all four corners. It really doesn't matter from which direction, but you're going to fold it around the corner. Fold the 3/4" edge over. A board or the sharp edge of

a table is helpful in doing this. Fold the 3/4" corners over. You now have a box with no bottom that is 3/4 inch (19mm) tall and 5 by 10 inches (12.5cm by 25cm).

Using a Push in Cage. Find a comb with emerging brood. This comb is bees who are fuzzy and struggling to get out of a cell they have just chewed open. A bee with its head sticking out of a cell is emerging brood. A bee with its behind sticking out of a cell is a nurse bee feeding a larvae or a house bee cleaning a cell. Shake (if the comb is strong enough) or brush all of the bees off of the comb. Release the queen on one side of the comb where there is emerging brood and some open honey. Put the cage over her so that it has both honey and emerging brood in it. Some open cells are nice too. Push the cage into the comb. It should stick up about 3/8" (9.5mm) above the comb to make room for the queen to move around. Make room in the hive for this frame plus the 3/8" (9.5mm). Some will have enough space and some will have to have a frame removed, but you need to have the frame with the push in cage and then 3/8" (9.5mm) space between the cage and the comb on the next frame so that bees have access to the cage to meet the queen and feed them if they like. Come back in four days and release the queen by removing the cage.

How do I keep queens for a few days?

If you need to keep queens that come in cages with attendants and candy, you can minimize the stress by keeping them in a cool (like 70o F or 21o C) dark (like a closet) quiet (like a closet or the basement) place and give them a drop of water everyday so they can digest the candy and they will usually keep for a couple of weeks if they weren't too stressed to start with and the attendants are healthy. Give them a drop as soon as you receive them and one a day after that. If the candy looks like it will run out, you might have to give them a drop of honey and a drop of water every day. If all the attendants are dead they will need new attendants.

What kind of foundation should I buy?

Obviously if there was a "right" answer, there would only be one kind of foundation. The reason there is not is that beekeepers have different preferences and different philosophies and different experiences.

Let's get a little terminology out of the way. With wax, about the only thicknesses I see available now are "Medium Brood", "Surplus" and "Thin Surplus". "Medium Brood" does not mean it goes in medium frames. It means it is of medium thickness. Surplus is thin and "Thin Surplus" is even thinner. Surplus is for comb honey.

Brood foundation.

The thing the bees like the most, is no foundation. Foundationless frames are the best accepted, and the most natural. They have many advantages from the Varroa control of smaller cells, to being able to cut out queen cells from a comb without worrying about hitting a wire or having plastic in the middle of the comb stop you. The thing the bees like next, is wax foundation. They can rework it to what they want. But the closer it is to what they want the better it will be accepted. I'd say, with unregressed ("normal") bees 5.1mm would be the best accepted, as that seems to be what they want to build. Dadant sells this. 4.9mm would be next and 5.4mm last. But I want the 4.9mm for the Varroa control aspect. So one aspect of foundation is the material (wax or plastic) and another is the size of the cell.

The other issue with wax foundation is reinforcement. DuraComb and DuraGilt have a smooth plastic core. This works well until the bees strip the wax off to use somewhere else or the wax moths eat down to the plastic. Then the bees won't rebuild on the plastic. Wires are often used in wax foundation. Some foundation comes with vertical wires in it and people use it as is. Some comes with none and some people wire it with horizontal wires. The wires slow down the process of the foundation sagging.

The material the bees seem to like the least and the beekeepers seem to like the most is plastic. The wax moths generally can't destroy the foundation (although they can destroy the comb). The bees can't rework the size very easily. Sizes of plastic vary from 5.4mm down to 4.95mm. It is available as sheets of plastic foundation or fully molded frames with foundation.

Fully drawn comb is also available in plastic. PermaComb (5.0mm equivalent cell size) is available in mediums and Honey Super Cell (4.9mm equivalent cell size) is available in deeps.

Foundation for supers.

The fully drawn comb is certainly an advantage here (once the bees have accepted and used it) as the bees have only to store the nectar and don't have to build any comb. The wax moths can't touch it nor can the small hive beetles.

The various plastic frames and plastic foundation are the same as the ones available for brood, with the additional use by some of drone comb (easier to extract) and Honey Super Cell's 6.0mm cell size with a fake egg in the bottom of the cell. The fake egg supposedly fools the queen so she won't lay in it. The 6.0mm also discourages the queen as it's not quite a drone size (6.6mm) nor a worker size (4.4mm to 5.4mm) so she doesn't like to lay in it.

For comb honey, there is surplus and thin surplus. This is so the comb honey will be easy to chew and not have a thick core in the middle. It is available from most manufactures. Walter T. Kelley has it in 7/11 which, again, is a size the queen doesn't like to lay in so you can forgo the excluder and not get brood in the supers.

Kinds of frames.

There are different kinds of frames and many of the foundations were planned to be used in one or the other of them. You can usually adapt either way, but you may want to take this into account when ordering frames and when ordering foundations.

Top bars come in grooved, wedge, and split (split is available from Walter T. Kelley). The grooved are usually used with plastic or with a wax tube fastener. I prefer them to the wedge. I can attach a lot more foundation a lot more reliably (so that it doesn't fall out) with a wax tube fastener than a wedge. The wedge type has a cleat that breaks off and is nailed into the frame to hold the foundation. The split is usually used for comb honey. The foundation is just dropped down into the split onto a solid bottom bar and put in the hive without nailing at all.

Bottom bars come in split, grooved and solid. I prefer solid, as the wax moths won't get into them. But your foundation may not fit with a solid bottom bar (depending on what you buy). The split ones are not very strong and always seem to break the first time I try to clean them up and put new foundation in them.

Grooved are usually used for plastic so that the plastic foundation snaps into the frame.

Plastic one-piece frames. These eliminate all the issues, other than acceptance and cutting out queen cells. No frames to build. The foundation obviously fits since it's already in there. If you buy Mann Lake PF-120s (medium depth) or PF-100s (deep depth) they are 4.95mm cell size so you get the advantage of small cell.

They are cheap (in large lots they are \$1 each last I saw). There is no wiring to do and they are well accepted by the bees.

What's an inner cover for?

An inner cover was invented to create an air space to cut down on condensation on the cover. The original ones were made of cloth but over time the wooden ones took over. In the North the problem with winter is condensation and most of that is on the lid. The warm moist air from the cluster hits the cold lid, condenses and drips down on the cluster. An inner cover was designed to prevent this. Over the years, many other uses have been found for them. You can put an inverted jar over the hole to feed. You can put wet (just harvested and extracted) supers over them to get the bees to clean them up. You can put a porter bee escape in the hole to get the bees out of a super (I've never had much luck with this). You can double screen the hole and use it between a nuc above and a hive below in the spring or fall to help the nuc stay warm. (This has not worked well for me in the winter due to condensation).

Can I not use an inner cover?

If you use migratory covers, you won't need one and probably don't want one. If you use a telescopic cover it will keep the cover from getting glued down with propolis. It's difficult to remove a telescopic cover that is propolized down to the box with no inner cover as there is no where to get your hive tool in to pry it apart. If you have a telescopic cover, I recommend you use the inner cover. If you live in the north and want to use migratory covers, make sure there is some kind of top entrance (you can cut a notch in the cover to make one. See Brushy Mt. migratory covers for an example) and put some Styrofoam on top of the lid with a brick on top of the Styrofoam. The Styrofoam will keep the lid from being as cold and the vent at the top (through the notch) will allow the moist air out.

What's that smell?

Smells are always best investigated. They are very subjective and therefore it's best for you to see it for yourself to associate that smell with that occurrence. The most common smell that people get worried about is the smell of goldenrod honey ripening. This happens sometimes between summer and fall. To me, it smells like old gym socks. Some people say it smells like butterscotch. Most people think it smells sour. Some people hate the taste of goldenrod honey. Once it's ripe, though, it does not smell like gym socks anymore and, in my opinion, is quite tasty. But I like strong flavored honey. Some people will pay a premium. I hardly ever get any, though, as I leave it for the bees for winter feed unless they get a bumper crop. If you smell the smell of rotting meat, I would investigate. Sometimes you have piles of dead bees from a pesticide kill or robbing. Sometimes you have a brood disease. It's worth investigating to see what the cause is.

What's the best beekeeping book?

All of them. Read every beekeeping book you can get your hands on. Of course, there is mine, which you are basically reading for free right now. But my favorites are the old ABC XYZ of Bee Culture, Langstroth's Hive and the Honey Bee and the ones that I've posted on my classic bee books page. In addition if you're past all the beekeeping books and want to know even more, all of Eva Crane's books are fascinating. For a beginner's book for beekeeping, Backyard Beekeeping by Kim Flottom is very good and simple.

What's the best breed of bees?

There has been much speculation by beekeepers for many centuries on this. I suppose at the turn of the 19th to the 20th century there was probably the most agreement. Italians were pretty much what everyone wanted. Now there are just as many who want Carniolans or Caucasians or Buckfasts or Russians. I see more variation from hive to hive than race to race. I'd say the best breeds of bees are the ones that are surviving around you. That's what I'm raising.

But if you want to buy some queens, the issues are how well they do in your climate (for instance Italians are probably better adapted to the South and Carniolans are better adapted to the North), and health (hygienic behavior, tracheal mite resistance, Varroa mite resistance etc.).

Why are there all these bees in the air?

Another panicked posting several times a year will involve a lot of bees flying. This is usually interpreted by the new beekeeper as either a swarm or robbing. A swarm does put a lot of bees in the air, but in this case they are just hovering around the hive. If the bees seem happy and organized and not frantic and fighting on the landing board, and especially if it's short-lived and on a sunny afternoon, then it's probably just young bees orienting for the first time. Look for signs of wrestling or fighting on the landing board to rule out robbing. If there are no signs of robbing, this is the sign of a healthy hive. If the hovering bees seem to be leaving a trail of bees as they fly off, then it's probably a swarm gathering in one of your trees.

Why are there bees on the outside of my hive?

Typically beekeepers call this bearding because it often looks like the hive has a beard. Causes are heat, congestion and lack of ventilation. Make sure they have room and ventilation and don't worry about it. Bees bearding is like people sweating. It's what bees do when they are hot.

It's good to cover the bases and then accept it. If you were sweating you'd take what steps were reasonable (turn on the fan, open the window, take off your sweater, drink lots of water) and then you'd accept that it's just hot.

With the bees, make sure they have top and bottom ventilation, (open the bottom entrance, remove the tray if you have a SBB, prop open the top box, slide a super back to make a gap) make sure they have enough room (put supers on as needed) and don't worry about it. Bearding is not proof they are about to swarm. It's proof they are hot. I think lack of ventilation contributes to an "overcrowding swarm" but it's not the only cause and it's nothing to be concerned about if you've taken care of the bees having ventilation and room.

Why are they dancing at the entrance in unison?

A few times a year some new beekeeper wants to know what the bees are doing line dancing (rhythmically swaying) on the landing board. This is called "washboarding" and actually no one knows why they do it, but they do. Personally I think it's a social dance. Perhaps even a thanksgiving dance.

Why not use an electric fan for ventilation?

The problem with an electric one is that the bees will find themselves fighting the ventilator. The bees have a very efficient cooling system already. I think you're much better off to just give them some ventilation top and bottom and let them control it.

Michael Bush