

"We cannot rely on mass inspection to improve quality, though there are times when 100 percent inspection is necessary. As Harold S. Dodge said many years ago, 'You cannot inspect quality into a product.' The quality is there or it isn't by the time it's inspected."

– W. Edwards Deming

My wife used to own a Chrysler Sebring convertible. After my daughter used it to run over a small deer (something I don't recommend), we found that the grille that goes in front of the radiator was cracked into many more pieces than were desirable. I ordered a replacement off of the internet but it didn't come with any instructions explaining how to swap out the old grille for the new one. However, a quick Google search brought up a plethora of potentially useful tips. The top-rated site had step by step instructions, starting with: *Step 1) Remove old grille.*

Hmm. If I knew how to remove the old grille, I'm pretty sure I would have been able to figure out how to reverse the process and install the new one. In fact, the remaining instructions seemed to take for granted that this was the case.

Car-repair instructions such as this are obviously not helpful. But how about the "helpful" instructions we give to brand-new beekeepers? "Inspect your colonies every week or so." Okay... but what does "inspect" mean? "Check for eggs." Great advice... but I guess that means I have to pull out the frames... (doesn't it?) How do I do that? I'm afraid that we often jump in with our advice at a point that may be beyond the skill-set of novices. Remember what it was like before you got that first package or that first sting? What did you "know"? Probably nothing, or very little.

With that in mind, I've compiled a compendium of inspection tips that I hope have some use to somebody. Some are from me and others were contributed by my bee buddies NCSBA Journeyman Beekeeper Mark Smith and Stephen "Jedi Steve" Peters. There are also a few I've picked up from NCSBA Chief Apiary



A proper inspection begins here. What can we expect to find inside this particular hive?

Inspector Don Hopkins. Some are extremely elementary... but how long did it take you to learn them? Others are very clever twists on old ideas. A few may be gems you've not heard before. Even if there is nothing helpful for you here, maybe the list is worth sharing with a new-beekeeper friend.

Before you begin

1. Know why you are inspecting a colony before you open the box. Don't disrupt the colony simply because that's what you think that people expect from you as a beekeeper. Don't get me wrong: excellent reasons to poke around inside a hive exist pretty much year-round (see August 2016's "[Seasonal Management](#)") but how will you know when to stop looking if you don't know what you are looking for in the first place? The reason for inspections will change with the season, but include:
 - Is there evidence of a laying queen?
 - Are there sufficient stores?
 - Has a new package made adequate progress on drawing out wax cells?
 - Is there evidence of brood disease?
 - Is there a robust population?
 - What are the Varroa mite infestation levels?
 - Are you a brand-new beekeeper who simply needs to learn what things look like inside a hive at this time of year?
2. Carry out to the bee yard not only what you know you need but what you might possibly

need. This is especially important if your hives are in an out-apiary (a place other than at home). What could you possibly find? Queen cells? Maybe you'll want to remove those frames to start a nuc (see May 2016's "[Making Splits without Bananas](#)"). If so, you'll want an empty box to put those frames in. How about extra smoker fuel, in case that "quick inspection" turns out to be not so quick? What if a mouse has chewed up the comb on a frame... do you have a new frame with foundation ready to go? How about a queen marking pen just in case the colony has superseded their queen since the last time you looked? (See July 2019's "[Why Mark Queens?](#)" for marking tips.)

3. Midafternoon is generally the best time to open up colonies for inspections. That's when the older, grumpier, more-likely-to-sting bees should be out foraging. There should be fewer bees in the hive, making the queen and everything else easier to see. The second-best time for an inspection is whenever you have the time to do it!
4. Warm and sunny weather usually means that your bees' dispositions will be warm and sunny as well. Dreary weather often leads to dreary, stingy dispositions, not enjoyable for the beekeeper. Don't rely on how things look outside the window right this moment -- be sure to check the day's weather forecast before planning an inspection. Bees can sense impending bad weather. This isn't magic; they are simply more sensitive than we are to things like changing atmospheric pressure. Even though it isn't stormy right now, the bees may disapprove of your visit and tell you that fact in the only way they have to do so if thunderstorms are on the horizon.

First steps

5. Observe the bees coming and going at the entrance before opening the box.
 - How much traffic is there per minute?
 - Is there pollen in the returning bees' corbicula (pollen baskets)?

- Is there fighting at the entrance?
 - Are bees attempting to access the hive at spots other than the entrance, such as under the cover? (See August 2019's "[Robbin' the Hood](#)".)
 - Do you want to be a real Entrance Detective? Download and read the free e-book [At the Hive Entrance](#) by H. Storch. Take into account that it is written for Europeans, but much of the information is also relevant to us here.
6. Puff a little smoke into the entrance and under the outer cover. Then WAIT a little before removing the outer cover. Give the smoke time to work!
 7. It is tempting to forego smoke if we are only going in "for a quick look" that may not take as long as the time it takes to properly light your smoker. Smoke the bees anyway. In my experience, un-smoked bees are extremely unpredictable. My "quick inspections" where I fail to apply smoke typically end in lots of stings, lots of dead bees and me swearing that I'll never do that again... until next time.
 8. Too much smoke can be just as bad as too little: it can aggravate the bees and increase stinging. Learn what is "enough smoke" for your bees and don't overdo it. For example, at my house, I strive to keep gentle-natured bees. Except during times of dearth (when no nectar is coming in), two quick puffs of high-quality smoke at the entrance and two under the cover are all that are ever needed. Then I set the smoker far enough away from the hive to prevent random smoke from wafting back onto it. If I need the smoker again, it is just a few steps away. See January 2018's "[What's in YOUR Smoker?](#)" for more smoking tips.
 9. Consider starting the inspection by going through the bottom box first. For example, in fall the queen and brood are likely going to be in the bottom box. If your goal is to verify that the colony is queenright, there's no need to aggravate the bees in the top box if you only care about what is in the bottom. As well as saving time, this tip will



An easy way to reduce the death-by-squashing of innocent bees is to set boxes catty-corner on the rim of an upside-down outer cover.

reduce the amount of alarm pheromone that is released into the air and so will tend to reduce stinging.

10. Stand to the side or back of the hive when doing manipulations, never directly in front of the entrance. Surely your mom taught you to never play in traffic!
11. Avoid banging, popping, shaking and jarring the covers and frames. I see the most Cavalier treatment of hives carried out by the most fully-protected beekeepers: think hazmat suits or the Pillsbury Doughboy. No pain, no problem, right? Well, when the equipment is roughly handled, the bees sting like crazy, but the stings don't hit home so they don't teach the beekeeper anything. Calm, quiet manipulation results in calm, quiet bees, avoiding unnecessary bee deaths. You don't have to bee-keep naked (I always wear a veil to protect my eyes and the inside of my nose and ears) but even if you bundle up, always work slowly, methodically and quietly.
12. Similarly, to the extent possible, avoid casting shadows over the open hive as you manipulate frames. Especially during dearths when bees are constantly on edge against robbers and predators, a shadow quickly crossing the open hive can result in an immediate defensive frenzy. One way to reduce shadows is to stand facing the sun rather than blocking it.
13. Remove the outer cover and place it upside down on the ground nearby. As you remove boxes, set them so that they rest catty-corner on the rim of the cover. That way, you minimize the number of touchpoints between the box and what it is sitting on. If you simply place the box flat inside the cover or flat on the ground, you will squash countless bees that are on the bottom of the frames. If you have a cute English Garden-style hive cover with a triangular top, consider carrying a conventional outer cover to the bee yard specifically for the purpose of setting boxes on it.
14. An alternative to stacking boxes catty-corner on the outer cover is to stand them on end so that the frames are perpendicular to the ground. This method does not allow you to then pull frames from the box that was moved, but it doesn't squish bees.

Pulling frames

15. Once the outer and inner covers are removed, examine the number and pattern of bees between the frames. If you are lucky, they may be packed in wall-to-wall, but more often there will be some groups of frames that have more bees than others. Typically, the frames with the heaviest concentration of bees are the ones that have brood on them.
16. Pulling out tightly-packed frames that are covered with bees can easily result in squished bees. So, first we want to remove a frame or two that is relatively empty; that will give us room to move the other frames around. Start by removing the second frame from the end (in a 10-frame box, either #2 or #9). Which end? Choose the one that has the least number of bees; the brood and queen are least likely to be in that area.
17. Break the propolis seal between frames before attempting to remove them. To do so, insert your hive tool in the gap between two frames and use it like a lever to push one away from the other. Do this on both ends of the frame. For the first frame, you'll

need to do it on both sides. Once the seal is broken, the frame can be lifted straight up. Do not pry frames out by inserting the hive tool between the end of the frame and the back of the channel in the box where the frame rests and attempting to leverage them out that way. The narrow strip of wood you are using as a fulcrum can pop right off if the frame is well stuck.

18. When inspecting frames, hold them so that the sun is over your shoulder. Done properly, light will shine all the way to the bottom of the cells, illuminating the contents. However, avoid exposing eggs and larva to direct sunlight in this way for longer than a few seconds; they can be damaged by too much ultraviolet light.
19. Despite what you may see bee-geniuses do on YouTube, NEVER lay frames on the ground. Use a frame perch, set them leaning diagonally against the hive or put them in an empty box that you've carried to the bee yard for that purpose.
20. When setting frames aside, place them in the shade, never in direct sun.
21. If you must reapply smoke during an inspection, point the smoker so that the smoke billows over the tops of the frames, not down between them. Natural draft action will pull the smoke where it needs to go. Shooting smoke between the frames sends ash, flames and too-hot air in the very places where you don't want them.
22. Return frames to the hive in the same order and front-to-back orientation that they were originally, unless you have a specific reason to do otherwise. As State Bee Inspector Lewis Cauble explains, "You wouldn't like it if somebody moved your furniture all around and left your sofa in front of your refrigerator!" The bees' nest is arranged the way it is for a reason.
23. Take special care with the frame that has the queen on it. When inspecting it, hold it directly over the open hive. If she accidentally falls off, she'll land where she belongs instead of ending up lost somewhere in the grass. When returning



Break the propolis seal on the end bars before you attempt to remove well-glued-in frames.

- that frame to the hive, make sure there is plenty of space to do so. Otherwise the queen can easily be rolled between the frames or squashed.
24. Mark frames to indicate the year that they were first placed in service. I use a Sharpie to write the year on the end of the top bar. Not only does this help me to know when a frame deserves to be recycled, it also shows which end is which. That lets me return the frame to the hive with the same front/back orientation it had to begin with. I've seen novices extend this suggestion by numbering the frames 1 to 10 so that they can easily maintain the original order, but anyone who has kept bees for a while knows that we often have valid reasons for changing the frame order, so this strategy quickly falls apart.
 25. Push thumbtacks in the tops of frames to mark ones of special interest. For example, a red thumbtack could be used to identify a frame that has queen cells on it. White could be for empty drawn comb. Black could mean that the comb is old and warrants replacing. Yellow could indicate lots of honey. Thumbtacks are far better than notes scribbled on the top bars because they can be easily removed when the condition no longer applies. Multi-color thumbtack variety packs can be found on Amazon.com and elsewhere.

What do you see?

26. Recognizing the signs of diseases such as American Foulbrood, European Foulbrood, Parasitic Mite Syndrome, chalkbrood, etc. can overwhelm the capacity of many if not most beekeepers. Fortunately for us, you don't have to be Doctor Doolittle or be able to distinguish *Nosema apis* from *Nosema cerana* in order to keep your bees healthy. Instead, what you must be able to recognize is what healthy bees, larva and pupa look like. Then if what you see isn't that, you have a problem and should consult with someone such as your local State Apiary Inspector. See June 2018's "[Who Ya Gonna Call?](#)" for more information on what our Apiary Inspectors do and how to reach them.
27. When you see what you've come to see, you can stop the inspection. As Edwards Deming reminded us in the opening quote, "inspecting", in and of itself, doesn't make anything better. The act of looking doesn't make more honey or cause bees to be healthy. When your goal is reached, stop and move on to the next hive.

Last tidbits

28. Even if you aren't yet ready for reading glasses in your normal life, a strong pair is very helpful when inspecting a hive. I suspect that most people who tell me, "I can't ever find eggs" or even "I can't find the queen" wouldn't have that problem with the right glasses in their toolbox.
29. Beekeeping, especially in the summer, can be a hot, dry exercise. Take breaks often and use them to rehydrate.
30. Always bring your cellphone to the bee yard. You never know when you'll want to snap a photo of something interesting. Mine has a timer, which is very useful when I do Varroa mite assessments. And you can also use it to call 911 if you set fire to the yard or your bees try to sting you to death!



What's wrong with these bees? We may not know exactly what the problem is, but they sure don't look healthy. Time to call the State Apiary Inspector! (Photo courtesy of Hallie Payne)

Your turn

I've got more tips, such as how to slide multiple frames into place all at once rather than one at a time, and therefore reduce the chance of flattening bees between the end-bars, but I'll save those for another day. In the meantime, I challenge you to share the tips that you have learned through your own experiences with others in your neighborhoods and bee clubs. Maybe you can even teach the old-timers something, if they are willing to learn!

Randall Austin is a NC Master Beekeeper who keeps a few honey bee hives in northern Orange County, NC. He can be reached at s.randall.austin@gmail.com.

Note: All previous articles are archived at https://baileybeesupply.com/educational_resources/

Copyright 2019, no reproduction in whole or in part without permission of the author, except for noncommercial, educational purposes.