

COLONY MANAGEMENT

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What is colony management?

Some beekeepers want a management plan that consists of doing absolutely nothing in order to keep a colony of bees. Once a fully established hive is delivered to their location, the bees would be allowed to follow a natural pattern of life and live freely. Unfortunately, nowadays, they will probably die within a year or two from mites, diseases, poor nutrition or some other disaster.

On the opposite extreme other beekeepers want to have a scheduled colony management work schedule where the colony is checked every three days, each frame carefully inspected, and the colony's growth and decline meticulously recorded. There may be more decline than growth with this intense inspection plan. It may document the colony's decline until it dies from so much intense manipulation by the beekeeper, and most likely from queen problems!

Good colony management obviously is positioned somewhere between these two approaches. It is simply providing the colony what it needs when it needs it, and nothing more. Very often fewer visits are better than a lot of visits, but those visits must be based on expected development of the colony, and never random. True, new beekeepers need to learn from their bees, so their colony management is often quite a bit more rigorous than a more experienced operator. An alternative to 'over-visiting' a colony is to have a nucleus hive and/or an observation hive for making frequent observations. Finding that balance is the real challenge of any new beekeeper.

An observation hive will give you the ability to make continuous observations – you might even think about setting up a video camera and watch recorded activity in high definition on the large screen television (perhaps set at 10x speed). Watch a queen cell being constructed, brood being fed, or monitor the color shift in the pollen as the day advances. Advances in technology certainly change beekeeping.

Management is observation?

The first lesson to learn in colony management is to make a quick but careful set of observations on the bees and their work. Check to see if there

are eggs in the worker cells, as this is an indication that the queen is present and active. Look at the amount of brood, comparing it to other colonies in the apiary. If you found multiple eggs in every cell your queen may be dead and the workers are doing the egg laying, producing drone larvae. Or the queen is producing drones in worker cells, indicating that she has depleted her sperm supply and the eggs she is attempting to fertilize are not, and are drones.

Look at the work of the bees. Is there nectar? Did your shoes or sandals get wet from nectar dripping, falling out of the comb? Then you are on a flow. Are there open cells at the corners of every brood frame where honey should be stored? Has the brood been trimmed (removed and eaten) – with just sealed brood and no eggs and larvae? That probably means that the colony is close to starvation. Is there new comb construction, plenty of newly stored honey? Are there queen cells? Have they hatched? Is the colony going to swarm? Has it already swarmed? (Do you know the difference?)

The key to all of this is simple – new beekeepers must learn an enormous amount of information in a very short time period. They must learn to look and remember what their mentor or teacher has shown them. It is very hard to work alone and learn beekeeping.

Queen, Brood, Food. Those three subjects are on your mind when you open a hive. If there are single eggs in the bottom of the brood cells, the queen has been laying in the past four days. If there is an abundance of brood, (eggs, larvae and pupae) on the brood frames then the entire colony is doing its job. If there is honey and pollen in the corners of each brood frame, and outside frames filled with honey and pollen, your colony is less likely to starve. If the honey supers are filled with new nectar, congratulations – your bees are making you look like you know what you are doing!

Look for disease automatically as you examine the brood. Sunken cells, darkened cells, cells chewed out, deformed larvae, funny colored larvae, fuzzy white, fuzzy dark or grey larvae, Varroa mites, wax moths, small hive beetles – these are things you should both note and respond to as you work. Some of those signs are red flags for big problems!

Queen Management

You have observed that the queen is laying and has a great pattern resulting in many frames of brood as any other colony, and the rate of brood development has increased during the pre-nectar flow, and been reduced after the flow. Unless you need to replace the queen (can it wait?), your queen management is finished for this hive.

If you do not find eggs and larvae your queen may not be alive, or has been replaced (or is being replaced) by a daughter in the supersedure process, and she has not finished her development. If you can find the old queen and the daughter you can install your own new queen or a queen cell.



This queen in a Texas colony shows the importance of having a large queen, one with fully developed ovaries and the ability to move around the frames with ease.

You may find a colony where the queen has really slowed down, or maybe she has not done much this season. Time to replace her, and get a new queen into the colony. If there are so many bees that the bees may swarm, then the colony might be split. If you find queen cells that are fully sealed, lots of sealed worker brood, and bees covering it, there is a chance that the colony has already swarmed and new bees have emerged to cover the frames so you really cannot see the difference from the last inspection. If the queen cells are new, and not sealed, the bees are about to swarm. Make nucleus hives with the queen cells, or cut cells and make comb honey – either way drastic action is required. Or just let the bees swarm and watch your honey crop fly out of the colony. Each swarm removes about 60 percent of the bees in the hive, so a colony that swarms twice is very much weaker when the process is over. Such colonies will grow and produce enough honey to survive the winter, but they will not be strong enough to share with any beekeeper.

Brood Management

Brood frames may be carefully shaken or brushed and added to other colonies to boost bee populations. Since these are nurse bees you are removing, you can add them too, but just make sure you do not add a queen in the process. A strong

hive may be switched with a weaker hive to equalize populations. Many beekeepers try to keep all the colonies in an apiary at the same approximate strength. Others take the strongest hives for honey production and split to make increase nuclei, using swarm cells, purchased queens or queens they have produced themselves. That is one of your big management decisions, based on your personal situation and beekeeping business plan (if you have one).

Check out *Increase Essentials* for more discussion on making increase hives, a.k.a. nucleus hives, nucs, nuks, nooks, splits, divides, set-offs, etc. Basically this is a very simple act of removing one, two or three frames of brood and bees from a strong hive and putting that brood and the adhering bees into a new box with a reduced entrance. If you only move nurse bees, those that have not flown, you can leave the hive in the same apiary. Or move them to a new location – especially if you have already overloaded the one you are using. The key is to put them into a smaller hive for better energy conservation, and reduce the entrance to reduce robbing.

Disease management, if detected, needs to be done. A high level of chalk brood, European foulbrood and sac brood are good reasons to remove the old queen and install one with some disease resistance, especially hygienic behaviors. Plus, a break in

the brood cycle reduces the visible part of the disease.

With American foulbrood, on the other hand, you need to act quickly and follow local required control methods (if any are in effect), such as killing the bees and burning the equipment. **DO NOT** mess around with AFB, thinking you will make it go away with drug treatment. That only hides the problem and forces you to medicate that hive as long as you own it. If any of this equipment is sold, it becomes a ticking time bomb ready to kill every colony where hive parts are installed! The appearance of mite parasites, small hive beetles and colony collapse disorder have caused many beekeepers to lose sight of the danger of having American foulbrood in their operation. You don't want it, and if you find it, use a conservative approach to get rid of it. Period.

Food Management

When the brood frames are surrounded by pollen, this is good. When the brood area on the frames is surrounded by honey and nectar that is good. If there is reserve food in outside frames and supers, your work may be done.

Or maybe not. If it is early in the season you may need to move food frames from one hive to another to make sure the hungry hives do not starve just a few days before the first flora food is available. It is an irony that the strongest hives are likely to die just before the season kicks in, and that is a waste of both human and bee effort. A few frames of honey, or supplemental pollen/syrup feeding are a small insurance payment to make that a good colony will produce for you in the new season. New beekeepers are wise to feed as often as they can when there is no nectar flow. If the bees do not need the food they will not be likely to take it down. But if they need it, and it is not present, your bees will go into a pre-starvation shutdown behavior. Old time beekeepers said that colony behavior changes when they have less than three frames of food in the hive. They are less likely to take chances, and more likely to grow slowly if at all.



These concentric bands of brood indicate that the queen and the colony are performing well in the spring, expanding the brood area in the center (when little nectar was available and capping wax was being reused) to an open brood area, into a larger band of younger sealed brood where the bees had fresh nectar to use for wax cappings. When a beekeeper sees good brood there is rarely need to physically find the queen.

The irony is that not too much later you will need to add supers for nectar gathering. Once the colony gets into its huge buildup rate, the number of bees and the amount of sealed brood will explode in a good year. There is good data showing that spring plants are flowering earlier and earlier, so work once done in May needs to be done in April. Adding boxes of drawn comb provides a colony with a stimulus for honey storage (a pheromone is produced by the drawn combs). The additional space will help the colony slow any swarming urge, giving them plenty of room for expansion. Colonies that are given supers must be strong and able to care for all this additional real estate. Weak or small colonies are not well prepared for this task. **BC**



Brood frame with sealed honey at the top of the comb. It appears that the colony expanded into frames of sealed honey, and have consumed honey to produce the energy for new brood production. By the next brood cycle this band of honey will likely be eaten as well, and the entire frame will be brood. Outside frames with pollen and nectar will then supply the food needs of the colony. If not the colony will be out of balance and may starve in a period of flightless weather.

Dr. Connor will again offer a queen rearing course at the family farm in Galesburg, MI, on June 17, 18, and 19. For an registration application and details, email him at ljconnor@aol.com. Details will also be posted on www.wicwas.com.

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