NECTAR & SWARM MANAGEMENT

You need to think differently than some scientists and editors.

Walt Wright

I owe the subscribers to this magazine a description of benefits of the system of swarm prevention. A how-to appeared in February 2002. The background observations leading to the system were published in a series that appeared in 2003, with the last entry delayed to April 2004. Through those published articles, the advantages of CB/NM were not emphasized enough to get you interested in trying it. In spite of significant advantages, the management system has been very slow to gain acceptance.

Initially, it was called Checkerboarding. The name came from the diagonal placement of frames of honey and empty frames of comb similar to the red and black squares of a checkerboard. There is no magic in the diagonal placement. It's the result of combining nine frames of honey in one box with nine frames of empty comb in another box on an alternate frame basis. The odd number dictates that one box gets five frames of honey, and the other four. For the box with five frames of honey alternated with empty comb, the honey must be in the outside slots. The same is true for the nine frames of empty comb. Starting at the outside edge of one box with honey and the outside edge of the other box with an empty frame of comb produces the checkerboard pattern. It's the alternation of honey and empty frames that is important, and not the diagonal layout. Ten frame boxes with an even number of frames do the same job when honey frames are directly over honey frames in the lower box.

Editors did not like the use of a word that was not familiar bee jargon. The name of the technique was changed to Nectar Management. Although both those words are familiar to beekeepers, together they do not convey much sense. I regret the name change to appease editors of the bee magazines. In this article, the technique name is abbreviated to CB/NM.

The objective of the scheme is to break up the overhead honey band that the colony maintains through the swarm prep season. This band of honey (nectar, if reversed) is the limit of brood nest expansion in the build up. When that limit is reached, swarm preps start. If the band of honey is broken up with empty comb, it disrupts the colony swarm game plan and swarm preps do not start. Very effective swarm prevention. Details were provided in May 03.

The basic advantages can be summarized in a few words: CB/NM harnesses and redirects the reproductive energy of the colony to produce more population and increase honey production. Let's pursue that summation a bit further. All species must reproduce. Reproduction is a basic urge, and rates right up there with self-preservation. However, the honeybee is smarter than most mammals (including us). Self-preservation, or survival of the existing colony, has priority over reproduction. The colony will not jeopardize its survival to generate a reproductive swarm. The trick is to provide the illusion that colony survival is jeopardized. Perception of empty comb overhead does that. The operative word here is *perception* by the colony. Addition of empty comb above the reserve band is not necessarily perceived the same way. But when the brood nest expands to include the empty comb, it cannot be ignored. The colony postpones swarm preps until that comb is filled. By maintaining empty comb at the top, the colony continues to add nectar overhead until they run out of calendar time at reproductive cut off. Brood nest expansion continues to that time also.

The literature opinion that swarming is caused by congestion has jaded our judgment on swarm prevention. In my opinion, the reverse is true. Congestion is caused by swarming. Our ancestors got it backward. There is no denying that there is an association between swarming and congestion, but the congestion is necessary and deliberate in the swarm process. If you can make this small adjustment in your thinking, you will be more receptive to a new approach to swarm prevention. It should be obvious that swarm prevention, based on congestion theory, is not reliable. That should surprise no one if the basic premise is false.

A discussion of literature-recommended swarm prevention techniques is outside the scope of this article, but note that all except queen cell destruction have the potential for removing or opening gaps in the overhead honey barrier. When the reserve honey barrier to brood nest expansion is interrupted, those techniques become more effective. Even though done for the wrong reasons those techniques have been generally beneficial. But the question is, why continue to treat the symptoms, when attacking the real problem is easier?

The intent of this article is to present the pros and cons of CB/NM. The cons come first. In between the cons and the pros are some features of application of this management system that will be considered by some as advantages, and to others may be disadvantages. Those are a matter of personal preferences. The advantages of CB/NM will be treated last to end on a positive note.

The disadvantages of CB/NM fall into two major groups. The first deals with the mindset of the beekeeper and the second has to do with drawn comb inventory. They will be discussed in that order. Both groups stem from a basic concept of CB/NM of an "unrestricted" brood nest. *The colony that is expanding the*

brood nest does not start swarm preps. The CB/NM system encourages the colony to build large brood volumes by expanding the brood volume at their best rate through the swarm prep period in late Winter. Since the first action of swarm preps is brood nest reduction (nectar congestion), brood nest growth through the swarm prep period generates much greater colony populations.

The much larger brood nest takes some re-training on the part of the beekeeper. Several things that some consider important need to be unlearned. The following may not be a complete list, but is an introduction to some of them, with comments:

The queen excluder stays in storage. The device is intended to limit brood volume. When it is understood that the device *does* limit honey production, leaving it in storage becomes more acceptable. In a pending article, the reasons for reduced production will be described.

The upper reaches of brood nest expansion will be harvest supers after brood nest reduction on the main flow. Brood nest reduction may leave some feed pollen behind, sometimes encapsulated under honey. While an inconvenience during the extraction process, frames of pollen can be used to good advantage by the colony if put back on the hive. Even if added at the top, the pollen will generally be consumed by adult bees in the early Fall.

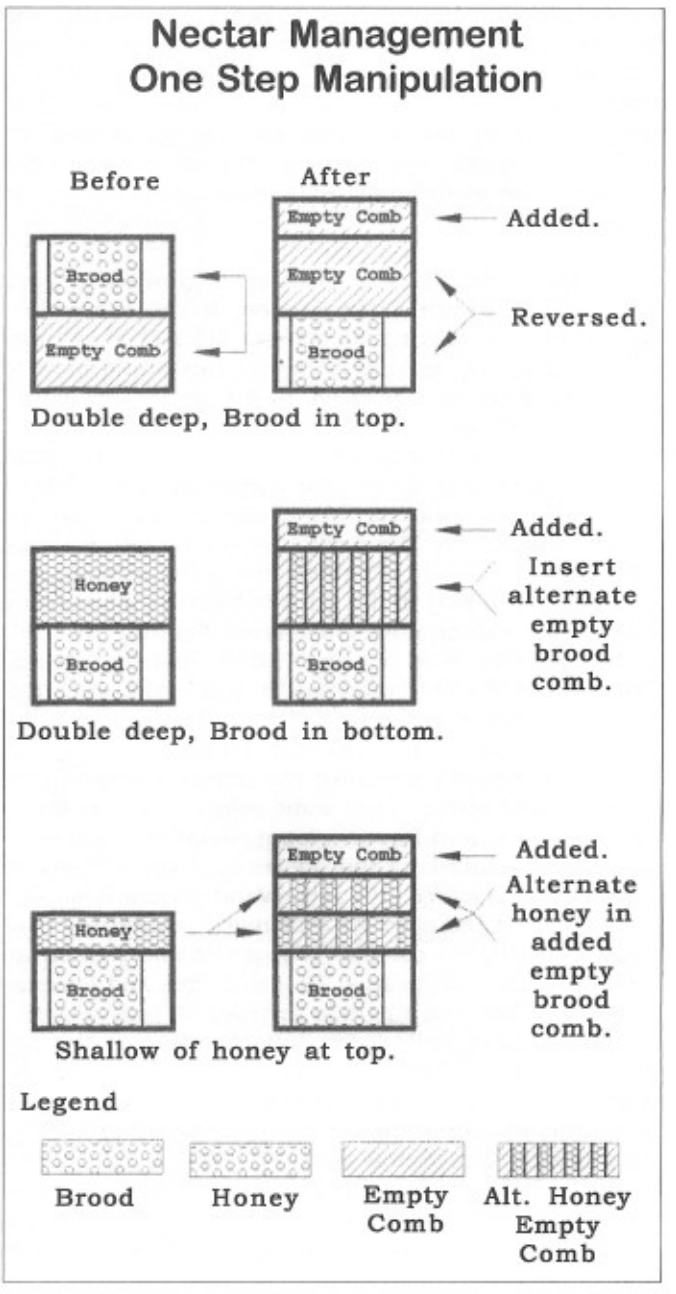
Extracting honey from brood frames is discouraged in the literature. The implication that dark comb discolors honey is a deterrent. If there is any darkening of the honey, I can't see it. Light honey in, light honey out. Keep in mind that when brood nest reduction is delayed by increased brood volume, the nectar stored comes from mid-season sources and is normally premium grade.

Any brood left behind overhead during brood nest reduction is typically drone brood. The brood nest reduction generally is fairly uniform across the hive, but the longer development period of drones creates another inconvenience. Given a little more time, those patches of drone brood will be capped honey also, but it is easier to prevent them. Two ways to do that are to provide enough drone cells in the basic brood area and avoid drone cells in the lower harvest supers.

Another subject that could use some persuasion is the concept that two deep brood chambers are enough. Two deeps with excluder do not normally achieve two deeps of brood. The colony that entertains swarm ambition starts brood nest reduction about six weeks prior to the main flow. With periodic reversal, the most brood volume at any time is about one and a half deeps. Compare that population with the CB/NM colony that increases brood volume continuously until three weeks before the main flow. The target brood volume is upscale of two and a half deeps of brood, and often exceeds the equivalent of three deeps. If you didn't follow that, it's OK. If you get too smart, too quick, it will be bad for the price of honey.

Having spent too much print space on the mindset considerations, it will be necessary to pinch down a more serious obstacle to application of CB/NM. A beginner will not be able to try the system because he will not have enough drawn comb. It takes about the equivalent of five shallows of drawn comb to accommodate the increased brood volume and nectar stored overhead during build up. Additionally, the seasoned beekeeper with enough drawn comb to support normal production with standard management for his area may be short on drawn comb to apply CB/NM across the board for all his hives. He could try it for a few hives while he builds drawn comb inventory.

One other consideration is cell depth in the uncapping process. Comb provided in the checkerboard manipulation is intended to be used for brood rearing. It must have brood rearing cell depth. The colony will not even use cells too short for brood rearing to store nectar in the build up. Short cells leave a blank space in the brood nest interior. This unique feature may require some adjustments in your uncapping procedure.



It is in your best interest to provide comb with the deepest cells possible, at least that is true for the comb provided for overhead nectar stored during build up. Brood nest heat rise is curing that nectar. The colony will continually top off those cells with fresh nectar within the cluster boundaries. The deeper the cells provided, the more honey that is accumulated during build up.

CB/NM induces supersedure beginning in your normal swarm issue season. If you are accustomed to looking for swarm cells at that time, that is very awkward timing. You would have to know the difference between swarm and supersedure cells. Although an article was prepared on that subject (July 05), looking for queen cells is not recommended. Learn to read top-of-the-hive signals that CB/NM is working for you, and stay out of the brood nest at that time in the season. Penetration of the brood nest may fracture supersedure cells and cause the colony to go queenless. You may find it hard to believe that a colony with a cluster three stories high is not thinking "swarm", but you can learn to "sit on it", and trust the system. Perhaps not the first year, but it gets easier after you have fractured a few supersedure cells.

The downside of automatic Supersedure is that upgrade queen you installed the previous season cost you time and bucks. Take some solace from the fact a supersedure queen from a strong colony is superior to anything produced by the queen sources, and queen characteristics carry over for several generations. The upside is that the need for systematic requeening goes away. The CB/NM colonies requeen themselves on an annual basis, and it's free. That is a time and expense advantage. You can upgrade genetics at your leisure.

The second either way consideration is the tall hives by CB/NM. Hives are sometimes six feet high by fruit bloom and eight feet high by main flow. I'm 6' 3" with arms like an orangutan, but the hive height gives me problems. In the first year of CB/NM, a lightweight, step-up platform was built to be able to look in hives when popping the top. In subsequent seasons, with system refinement, that two-foot advantage was not always enough.

The upside of tall hives is that the height translates into more honey in the tanks at harvest time. The downsides are the hive access and transportability. Moving hives for pollination is made much more difficult. Although we have moved hives to apple pollination by breaking them in half (transport in two stacks) there is some extra effort in ventilation and securing the parts for transport.

The basic advantages of this system are low-effort beekeeping with increased honey production. The CB/NM scheme was originally devised to reduce swarming, but the side effects are even better. We'll start with swarm prevention.

CB/NM is not the only approach to swarm prevention that is effective or reliable. Dee Lusby in Arizona uses a slightly different scheme that attacks the overhead honey reserve. She raises brood into the next higher box. While more invasive in that it includes brood nest disturbance, it supports her objective of acquiring natural comb with smaller cell size. She calls that system "pyramiding up." So, there are at least two management schemes that are available to the experts. If they weren't so busy duplicating each other's efforts in pest management, some could check out one or both.

The swarm prevention aspects of CB/NM are closed out with the statement that one hundred percent swarm prevention is attainable, but, it is important to follow the recommended regimen. Adding your own shortcuts or "improvements" will get you into trouble. (And damage my credibility.)

That brings us to the second major advantage- simplicity, or the low effort aspect. A child, who knows nothing about beekeeping, can alternate combs of honey and empty comb. It is done at the top of the over-wintered colony in late Winter, preferably before the colony has outgrown the brood chamber where they wintered. Since there is no brood nest disturbance it can be done in almost any weather short of a pouring rain. I've checker boarded in a light rain at 40°F. A tight cluster is actually of benefit. Some bees from inside the cluster will come up to investigate the intrusion, but they are warm already. They can make their way back down after your five-minute manipulation. After the first one-step manipulation, all that is required is maintaining empty comb at the top. That can also be done in non-flying weather. Once a week, add supers at the top, as required. When you get beyond the swarm prep season, established colonies (three years or more) will stop adding nectar at the top, second year colonies may continue to add nectar at the top. This is the three-week lull before the main flow. Prepare for the spurt in main flow storing by adding extra supers during the lull. Very simple!

If you are interested in honey production, CB/NM is your best bet. The third advantage is increased production. Look at it this way: If you get twenty percent swarming, stopping swarming would only increase production by 20 percent, other aspects being equal. The increased brood volume of CB/NM can increase honey production from 30 to over 100 percent *in my area.*

Production rate is increased on the main flow, by virtue of the increased population. In addition, you get more production on both ends of the main flow. Nectar is accumulated during build-up, and the increased brood volume is slower to decline on the trailing edge, generating more production. I shouldn't have to remind you that population is the key to honey production.

There you have it. It's no inconvenience to me if you continue to make partial honey crops for the rest of your beekeeping career. But don't be surprised if the novice you tutored this spring is soon putting your production to shame. BC

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