NECTAR MANAGEMENT 101

Walt Wright

STOP SWARMS • MAKE MONEY

If there is anything on which most beekeepers agree, it is that stronger colonies produce more honey. If honey production is your goal, your management system should be directed at generating the maximum strength possible.

Dr. C.R. Farrar demonstrated, some 50 years ago, techniques for building colony population to what he called production strength. His objective was about three deep brood chambers of brood. He accomplished this level of colony strength by shuffling brood chambers on a regular basis. He also noted that his approach reduced the incidence of swarming.

Unfortunately, the theory that congestion causes swarming has induced a beekeeper reservation about early colony strength. We have been led to believe that too strong, too early leads to swarming. And we know that the swarmed parent colony produces little, if any, surplus honey. Most swarm prevention techniques take away potential strength or weaken the colony. Simply, potential population is reduced by removal of brood or disruption of colony development, honey production potential is adversely affected.

My dictionary defines congestion in two ways. Overcrowding is one sense of the word as in the downtown traffic jam. A second meaning is when normal operation is impaired as in nasal congestion. The beehive has both types of congestion associated with the swarming season. The crowding of adult bees is required to staff two viable colonies. The impairing of normal operation is the appearance of nectar accumulation in brood rearing comb. The literature is somewhat obscure on nectar congestion of the brood nest, but we believe it is a necessary element of the colony swarm preparation process. Before generating swarm cells, the colony reduces the size of the brood nest by storing nectar at the top as brood emerges. There are several advantages for both the parent colony and impending swarm to generate a reservoir of open-cell feed prior to committing to swarm.

The intent of swarm prevention by nectar management is to prevent nectar clogging of the brood nest. We won't bore you with the details of why we believe that nectar congestion is a preliminary requirement for swarming. But preventing its starting is more reliable and less labor intensive than periodic reversal to compensate for it. We set out to stop it before it starts. By adding empty cells for nectar storage immediately above the brood nest, nectar congestion is avoided. The colony prefers to store nectar overhead if empty cells are encountered within the cluster prior to full brood nest expansion. The colony that doesn't reduce the brood nest to a level that can be managed by half the population, (what's left after swarm departure), does not start swarm cells.

The basic objectives of nectar management are quite simple. They are listed and discussed below:

a. Induce the colony to store nectar overhead very early in the build-up.
b. Maintain empty comb at the top for continued nectar storage throughout the entire build-up.
c. Monitor for continued brood nest expansion into the accumulated overhead nectar up through the swarming season.

The results of meeting these objectives are dramatic. The colony that is expanding the brood nest and storing nectar overhead through the swarming season does not consider swarming. The colony goal for that period is changed from generating a swarm to filling the ever-increasing empty space. In my part of Tennessee the typical colony arrives at the start of the main flow with the equivalent of three deep brood chambers of brood and two shallow supers of nectar *above* the brood nest. The huge population is poised to exploit the main flow.

Variations in the overwintered hive configuration, cluster location in the stack, and area seasonal forage availability require some adaptation of these recommendations. The primary tool for inducing overhead nectar storage where solid capped honey exists is the thinning of that honey with empty brood comb. This serves more than one purpose. Not only does it encourage storing nectar above the brood nest, but it also improves the colony awareness of additional empty comb above the solid capped honey. Often the colony will ignore empty comb added above the overhead solid capped honey barrier. They seem to perceive the top of the capped honey as the top of the residence cavity. But if they store nectar through the honey barrier on empty comb inserted between frames of honey, it improves their perception of the available space above. When the colony consensus is aware that empty space is available above, they delay swarm ambition and continue to increase the size of the brood nest. If they are successful in filling the space with nectar, the colony can revert to swarm ambition. The deliberate maintenance of empty comb *above* the cluster top prevents the colony from filling the upper reaches throughout the swarming season. We recommend maintaining two supers of empty drawn comb of brood-rearing cell depth above the cluster through the entire build up period. Note that in the sketches of

the manipulations, at least the equivalent of two empty supers is the starting point. Honey storage supers can be used above the desired brood level, but deeper cells will accumulate more build-up nectar. They will fill empty cells within the cluster boundaries with nectar on a priority basis.

A third advantage of thinning the overhead solid honey is faster growth rate of the brood nest. If the colony is increasing brood nest size into capped honey, they consume that honey as feed and free up cells for additional brood.

When the overwintered colony has a box of empty brood comb in the stack, thinning honey may not be required. In the case of a colony wintered in a double deep, where the cluster is in the top chamber and the lower deep is empty, just reverse *and* add empty brood comb at the top.

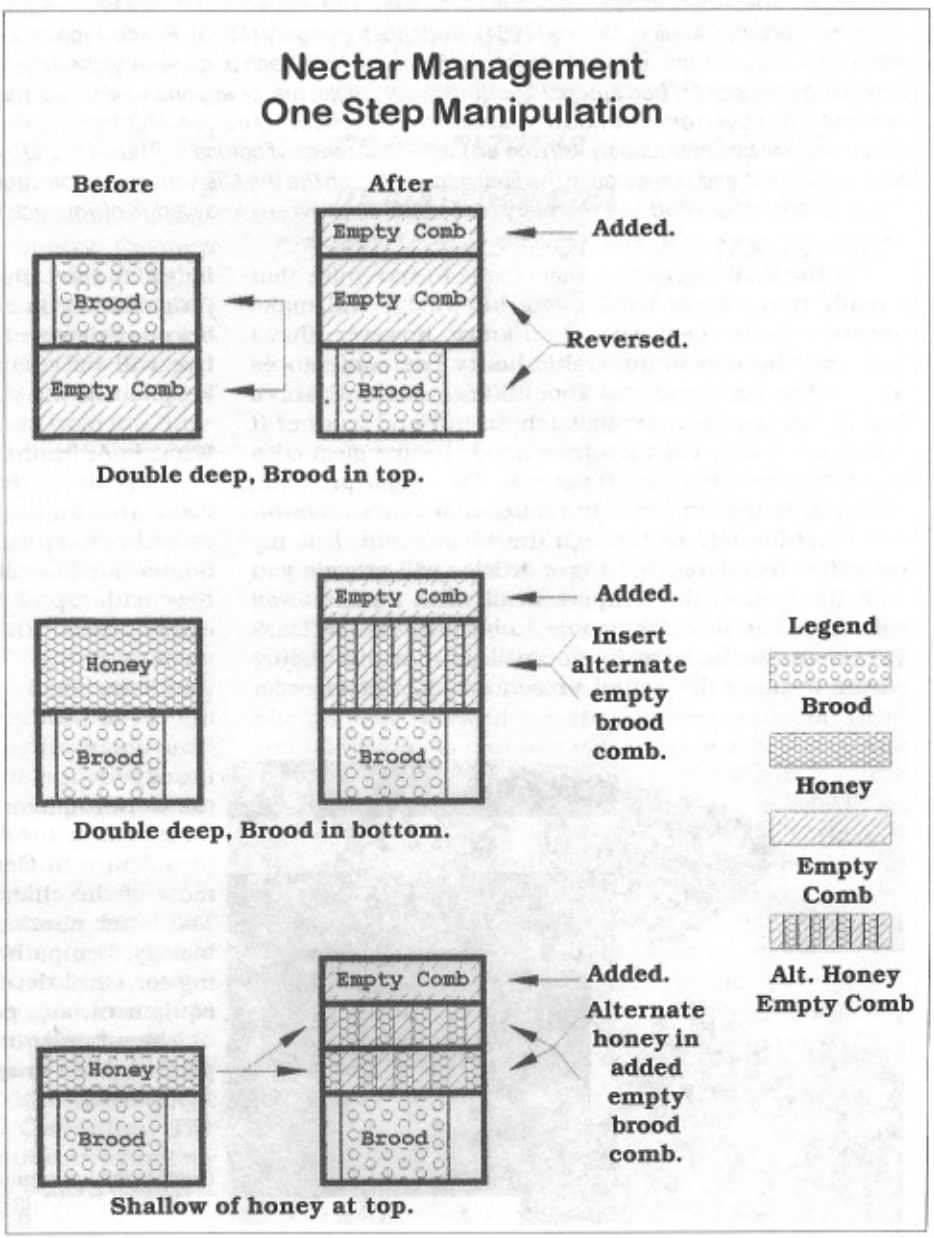
Providing nectar storage space very early in the season is a key ingredient to success of this system. In my part of Tennessee the swarm issue season is early April and the prime swarm preparation period is late March. To precede the bee's schedule, we often perform the manipulation in late February on stronger colonies. The appearance of new, white wax at the beginning of the main flow is the timing reference for the bees' schedule at your location. The manipulation should be performed *two full months* before white wax. Our white wax date is typically May 1.

Some examples of the one-step manipulation are provided in the sketch. All three examples induce early overhead nectar storage. If your overwintered colony differs from the examples provided, you can apply the basic objectives to your specific hive configuration.

To monitor for continued broodnest expansion through the swarming season, the beekeeper only has to penetrate the hive to the top of the brood nest. The colony expands the brood nest in small discrete steps at the top. Lift off accumulated nectar down to the nest expansion dome. If you lift out a frame with the arc of the expansion dome defined, the expansion band is obvious. Capped brood is below the expansion band and full cells of nectar above. The expansion band can range through reduced nectar, dry, eggs laid, or open larval brood, depending on the stage when inspected. At any of the stages of expansion, the band is obvious at a glance. We call this "drying cells for expansion." The expansion band at the top of the brood nest is evidence that the colony has no intention to swarm. Drying cells above the brood is exactly the opposite of nectar congestion in the top of the brood nest.

Dr. Farrar achieved swarm prevention by his labor-intensive quest for greater hive populations. Nectar management achieves greater populations with less effort in the quest for swarm prevention. It would seem that population of the colony and swarm prevention are not necessarily at cross purposes. We've had 50 years to unlearn the concept that bee crowding induces swarming. We believe both types of congestion are effects of the colony swarm game plan, and not the "cause." But most beekeepers persist in weakening the colony in the interest of swarm prevention. You can continue to "shoot yourself in the foot" regarding honey production, or try building greater populations by applying an effective swarm prevention technique.

Walt Wright is a sideline beekeeper who has been studying swarm management and honey production for several years. He lives in Elkton, TN.



Objective: *Induce nectar storage above the brood nest.* ***Timing:*** *Prior to the swarm season.* ***Follow-up:*** *Maintain empty brood comb at the top. Do not let colony fill comb to the top.*