Honeybee Fall & Winter Management

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Generally, after the spring nectar flow has reduced, and then become all but nonexistent as far as the bees are concerned, the initial burst of brood rearing is also reduced, and even suspended. The supers may be full of honey, and hopefully the bees have stored pollen as well. In Middle Tennessee, this period comes about the last week of June or first week of July. This is considered to be normal, although some of this area's beekeepers may be lucky enough to have a small number of forage plants in range of their hives, or may have moved their hives to a new location for the 'dearth', as this forage decline is called.

While the bees may do very well on the stores they have accumulated in their hives, an overzealous beekeeper may deplete the stores by taking too much cured honey for himself, without regard for the welfare of the bees.

Even without interference from the beekeeper, the bees may well use up the spring stores, and can be short on food for basic needs until the fall forage plants bloom.

Beginning in July, and at least by August, hives should be monitored for stores, and if found lacking, they should be fed.

Sugar water, in a mix of **2 parts** cane or beet sugar to **1 part** water, and mixed to total solution of the sugar, can be fed as s substitute for nectar.

Raw pollen, and perhaps a substitute or supplement, fed dry outside the hive, can be a welcome forage in extreme shortages. Bees can get by well with these products, and may even restart brood rearing with renewed vigor.

It is best that when feeding bees, production supers be removed and brood areas should be monitored to insure the combs normally consigned to brood rearing are not filled with stored food. The addition of drawn comb to the brood area may be necessary to give the Queen a place to lay eggs

The 'fall flow' of nectar is generally considered by many to be "the bee's share" of their forage. Sometimes, those forages and consequent stores, are very abbreviated and woefully lacking in sustenance, and therefore not sufficient in food revenues and resources for the colonies. Many areas, if not rural or agricultural settings, may not be rich in those plants needed for honey bee forage. This is a situation that should be recognized by the beekeeper and any corrections required should be dealt with immediately.

Since the provisioning of the colony requires a lot of work for the bees, and the last forages may be gone in a matter of weeks, it is imperative that the colony be well populated and healthy. The bees produced in the nursery in the last month (late October/early November) must live through the winter and into March, and must be healthy and fat to produce the brood food and Queen food to build the colony back up in the Spring.

While the natural progression of the colony is to raise brood while food is plentiful, some problems may be attendant to this lifestyle. As the bees may be hosts to some virulent diseases, and indigent and veracious pests, the welfare of the colony may thus be impaired. It is the job of the attentive beekeeper to test for these problems, and apply whatever measures may be needed to remedy the problem.

Varroa destructor—known to be a widespread parasitic pest of honeybees, is also known to be a vector of many viruses and bacterial diseases. Weakened brood can be vulnerable to starvation as well. Weakened adult bees may not be healthy enough to forage effectively, or raise brood and guard the colony. Reduction of the pressure of Varroa mite infestation is crucial in most cases.

Knowing the measure of infestation is paramount to treatment need. The methods of testing are simple, and the need for equipment is small.

Reducing the mite count to begin with can be helpful, such as using a screened bottom board on the hive, to allow mites that drop naturally to fall away from the bees and out of the hive. The natural drop of 'phoretic' mites, the mites that are attached to adult bees, may be enhanced by the simple application of powdered sugar to the colony.

By installing a piece of oiled plastic, cardboard, or other material under the frames/bottom board screen, then dusting the bees from above with sifted powdered sugar, the mites can be detached from the adult bees via the preening that ensues in the hive. The loose mites can't hold on with the powder on their feet, thus fall to the 'sticky board' that awaits at the bottom of the hive. The mites can be counted, and an assessment made of the infestation. This should be done without the supers in the way, so they should be removed first.

Wait 15 minutes for the full effect of the 'sugar shake' to be realized. Record your count for later.

A 'natural drop' assessment can be made also. Use the 'sticky board' as with the 'sugar shake' method, but the drop is measured by leaving the board in place for 24 to 48 hours. The count can then be made, and assessed.

Counting the mites is only the first step in your assessment. Reckoning the number of adult bees in the colony being tested is the next most important number needed.

If a single ten-frame deep hive body has enough bees to cover all frames and sides, the number of bees can be assumed at 25,000 to 30,000. With a mite drop count of 100, the figure would be 0.33%. (100/30000=1/300=0.33%).

However, when using the 'sugar shake' or the 24 hour 'natural drop', the number of mites that actually can be counted may not show a TRUE number of phoretic mites.

A better method, though more work intensive, is to obtain a more precise number of bees, from the source, the *brood nest,* then subject those bees to a more vigorous sampling method.

For this, some tools must be gathered, and a small amount of time (30-40 minutes) set aside for testing. You will need 2 dishpans, plastic bus pans, cardboard boxes, or similar devices; a ½ cup measure, a quart jar with a screen top; a solid top for same jar; ½ cup of powdered sugar per hive to be tested; about 1 gallon clean water.

TO START, the brood area of the hive is exposed, a search is made for the frame with the Queen, and the frame and Queen are set to one side, as in, put the frame with the Queen attached, in an empty box.

Once the Queen has been isolated, a frame or two of brood bees are then shaken into a bus pan, dishpan, or box, to enable a sample of bees to be taken. Scoop up ½ cup of live bees from the container, and dump them into the jar, place the screened cover on the jar, and drop ¼ cup of powdered sugar onto the bees. Shake the jar gently several times, wait a couple of minutes, then shake the jar gently again. Wait several more minutes, then shake the powdered sugar from the jar into the second dishpan, without removing the lid. Add about ¼ cup more sugar to the jar, and repeat the process, shaking gently, then resting between shakes. Again shake the powdered sugar from the jar into the dishpan until all the sugar has been removed from the jar. The bees may then be returned to the hive.

The powdered sugar jar can then be rinsed with clean water, and the rinse water may be poured into the shaken sugar in the dishpan. Add more clean water until all the sugar is dissolved. The mites can then be counted.

Since the ½ cup of bees is approximately a 300 bee count, a better analysis of the mite infestation can be made.

A count of 6 mites per 300 bees is a 2% infestation, and at 15 mite count the percentage is 5%. If a percentage of 5% is detected, the threshold for future treatment should be considered.

A slightly more precise, but more drastic test for mites can be made by substituting alcohol for the powdered sugar. This will kill the bees, but the mites are loosened more surely and instantly. The mites can be counted by straining the bees and alcohol into the dishpan, through the sieve, and a second rinse of alcohol and shake will release all mites from the bees. The count is made, and the percentage of infestation recorded.

Once a determination is made that treatment is necessary, a choice of which treatment used will need to be determined.

Treatment should be regarded at the outset for their toxicity. Since most treatments are chemicals, the beekeeper would do well to think in terms of how much damage can ensue from application to the colony. As the toxicity of treatment rises, the effect on the Queen, the brood, and the adult bees become more severe, and may even be irreversible. The warnings on the label should be heeded, and the course of application followed precisely.

After treatment, testing should be done to find the result of the treatment. If necessary, if the mite counts are still too high, more or stronger treatments may be necessary.

Following mite treatment, a general assessment of the strength of the hive and the measure of food stores should be taken. If needed, a smaller, less productive colony may be fed sugar water while the weather is still warm (nights above 30 degrees, days above 50). Also, a dry pollen supplement or substitute may be given—fed outside the hive in warm weather, and a pollen supplement/substitute patty may be fed inside when days are below 50 and nights below 30 degrees, when hive beetles are less of a problem.

If hive beetles are seen to be lurking in every corner, a number of beetle traps may be used in the brood area. Also, too much open, unused comb area is problematic, since bees need to be patrolling the hive. Reducing the area not used will help keep beetles in check, in effect making the colony strength more efficient.

Once the fall days become cooler and the bees no longer forage, the feeding situation changes. Liquid feeding is out of the question when the temps are below 40 degrees during the day. If a colony does not have a sufficient store of food, the best plan may be to join the colony with a stronger one. However, this should be accomplished before the colonies go into cluster. Once clustered, the hives will not mingle.

An alternative is to place a smaller colony on top of a stronger colony by removing the top from the strong colony, installing a double screen in its place, and placing the weaker colony on top of the double screen. The resulting heat from the lower, stronger colony will be beneficial to the weaker colony, enabling them to possibly make it through winter. Remember to install a rear (opposite the bottom) entry for the upper colony, and provide the upper colony with plenty of ventilation.

When preparing hives for cold weather, several measures can be taken to prevent catastrophe.

Be sure to site colonies out of the prevailing cold winter winds, or at least provide a wind barrier for the colonies.

A wrap may be necessary to keep colonies warm enough to survive, with attention also directed to top insulation, and perhaps an absorbent inner cap to help keep condensation from dripping on the cluster. Remember to provide plenty of ventilation at the top.

A mouse guard is most certainly an asset, as even a strong colony, in cluster, will not be a deterrent for a mouse looking for a warm house and a decent meal, such as pollen, or worse.

If snow becomes an issue, closing the colony's only entrance/exit, it may be necessary to supply them with an upper entrance, such as a small ½ inch hole, bored in the upper hive body, with perhaps a closure to protect them when not needed.

A carefully constructed pile of granulated sugar on newspaper, then sprayed with a small amount of water, laid on top of the top bars on the uppermost frames of the hive, will allow bees to connect with honey frames they might not otherwise be able to access.

When in doubt about the nature of their stores, or their ability to access them, opening the hive is not as serious as losing the colony to starvation. Be brief and purposeful, but be sure to check on them if you are uncertain.

Honeybees are tough; if given a chance for survival, they can be quite remarkable in their resource.