

# The Traveling Beekeeper



## COLONY NEEDS DURING WINTER

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*There is an enormous range of recommendations about getting colonies ready for winter. Some beekeepers recommend every colony have 90 to 120 lbs of stored honey and pollen to survive the winter, while others are able to winter colonies on just a fraction of that amount. Parallel to that is the overwintering of huge populations in large brood nests compared to those who winter bees in four and five frame nuclei. Some people winter colonies with no preparations, and others wrap their colonies in thick insulation materials. This contrast list goes on and on.*

**P**art of this just reflects the adaptive nature of honey bee colonies, and their inherited ability to survive under a wide range of environmental conditions. There are variations on how different races and families of bees deal with wintering, with some with many adaptations for survival and others less fit for winter. The other factor, where you winter your bees, makes a big difference, too. If you have bees in an area where winter is only a few weeks long, your focus will be much different than the beekeeper in northern states and Canada who must prepare colonies for months and months of limited flight.

More and more beekeepers accept the reality that preparation for winter must start before the summer is officially over at the autumnal equinox. There are three focus points all beekeepers need to address at this time of the season: 1. The production of healthy 'winter' bees with optimal nutrition stored in their bodies, 2. The management or treatment of colonies against pests and diseases, especially varroa and tracheal mites and nosema, and 3. The colony must be provided with enough food to survive until the reappearance of natural food in the spring.

### Anticipate

Prior to the appearance of mite parasites in bee colonies in North America, many bee-



**To get a five frame nucleus to successfully winter, you need to combine a young queen, 25 to 35 pounds of honey or stored food, as well as adequate protein. This colony has protein on it all winter. The photo was taken in early March, 2010 in Michigan.**

keepers felt that their biggest problems were American foulbrood and pesticide losses. For foulbrood many beekeepers used a calendar antibiotic treatment program to prevent the disease from appearing in their bees. At the same time a number were strongly against this approach, since the colonies were being medicated with an antibiotic that usually was not needed by the bees. That pretty well reflected the attitudes of the medical and veterinary professions before 1980.

With pesticide losses, beekeepers were far more likely to anticipate losses, and most commercial beekeepers either priced pollination rentals to include some bee losses, or they kept their bees away from the fields or orchards being treated with bee-killing insecticides. Small-scale beekeepers often did not know what killed their bees, and were quick to blame disease, swarming or starvation for bee losses rather than consider a pesticide exposure, unless it was so dramatic that it was hard to mistake for something else.

In this post CCD era, more and more beekeepers are PROACTIVE rather than reactive in their bee management. Rather than waiting for problems to develop and for bee colonies to die, more and more are focused on the sampling and testing of colonies for various problems. Last month I discussed Dr. Medhat Nasr's proactive testing for mites and nosema in Alberta, Canada. The beekeepers there are encouraged to treat only when necessary, and to treat in the correct manner.

All beekeepers should develop the habit of sampling for varroa mite levels. This is the premiere problem facing most beekeepers in North America, but this is often linked to other issues (hive-based pesticides, bee pathogens, and poor nutrition). Sampling methods range from the ether spray method, the double jar method shown in last month's column, or using a powdered sugar dusting to count the adult mites that are dislodged by the sugar and fall to a greased sampling tray.

Sampling is one thing, but knowing what the numbers mean is another. A beekeeper spoke of a mite drop of 40 mites. He said it was a natural drop (no powdered sugar or anything else was used), over a three-day period. He thought the number was low. I suggested that it seemed high to me, since I like to see less than 10 mites drop in 24 hours with a powdered sugar dusting. This is the challenge, isn't it? What do these numbers mean? It is frustrating that most of the time it is hard to get good advice on this.

For me, the lower the mite drop, the happier I am. I like to see well-chewed mites, ones with broken shells and torn legs. Get the hand lens out and take a look! Are your bees grooming the mites off themselves?

Here is what we can sample for in a proactive management plan:

**Varroa mites** – as discussed above, we can use one of the sampling methods and make decisions based on local practices and recommendations.

**Tracheal mites** — A few dissections under a lower powered microscope will provide



**Beekeeper Joe Calme uses powdered sugar on a screen to evaluate mite levels, which may be part of a rigorous mite reduction program the summer before the bees go into winter.**

evidence of any possible tracheal mite problems. This is useful in the fall and winter, and during spring buildup.

**Nosema** — A higher powered microscope (compound scope) is needed to check the spore levels in bees, and this is beyond the finances of small beekeepers. But they should put pressure on State officials for testing, if they do not already provide this service.

General beekeeping awareness should dictate elimination of certain colonies with diseases. Colonies with American foulbrood should be quarantined, and local practices followed for treatment or destruction. Colonies with the general symptoms associated with Colony Collapse Disorder are probably not worthy of any effort to save. Colonies with PMS (Parasitic Mite Syndrome, a collection of symptoms that can include European foulbrood-like brood, K-wing, diminutive wing, and other virus-transmitted diseases) should be destroyed or put into an intensive treatment program with knowledge that few of these colonies can be expected to survive the winter period.

#### Feeding program

Even before the last of the late summer/early fall nectar is gathered, many beekeepers begin a protein feeding program with the goal of producing a large number of well-fed worker bees that will serve as the Winter Bees. By feeding, it is hoped that they will be 'Fat Bees', endowed with extra proteins, enzymes and other nutritional components needed for brood rearing during the winter. We fed protein patties from mid August to December in 2009, and the limited success we had in wintering bees (after an

especially poor season) is credited to the feeding program. We fed thick sugar syrup (2 parts sugar to 1 part water) in division board feeders. The frame feeders with that had built-in chimneys to eliminate drowning certainly had an advantage over feeders with smooth or rough interiors. We want the protein to go into the bees, with any natural pollen being stored in the cells. When the nectar flow is over our minimum carbohydrate feeding goals are:

- 4-frame nucleus 3.5 frames of honey (or stored sugar syrup)
- 5-frame nucleus 4.5 frames of honey (or stored sugar syrup)
- 8-frame hive 7 frames of honey (or stored sugar syrup)
- 10-frame hive 9 frames of honey (or stored sugar syrup)

In late October or early November we re-evaluate the food storage levels of colonies and add extra frames of stored honey to those colonies that require them. We do not feed colonies with poor chances of wintering since there is no point if investing the time, feed and equipment in colonies that are sure to die over winter. A better plan is to combine a marginal hive with a strong hive, and let the bees sort out the best use for these themselves. Don't combine two weak hives, since they are still unlikely to succeed during the winter.

Many beekeepers medicate with Fumagillin as indicated by microscopic testing and spore counts. Follow the directions and use commonly accepted practices when using antibiotics in the hives. Keep records of the dosage, time and frequency of treatment.

#### Relocating hives

Wind can be stressful and deadly to hives in the winter. While a ridgetop may be a great place for bees to gather nectar during the summer, it may be lethal to colonies in winter. Move the bees to a wind shadow, where you and the bees can comfortably stand on a windy day. Avoid low and wet spots along lakes, rivers, streams, since they are likely to flood in winter and spring rains. Ask property owners how high the stream has flooded before you put bees into a winter location.

Some beekeepers group their nucs and single hives into groups of 2, 4, 6 and 8, depending on the design of the boxes and the pallets they are on during the rest of the season. The idea is to let each colony help the others out with some degree of heat sharing. They may wrap colonies, making sure each one has proper ventilation and flight openings.

#### Wrapping & Insulation

As you move north or into the mountains, wrapping is more common, increasing the percentage of live colonies in the spring. The simplest method is to wrap colonies with roofing paper (a.k.a. 'tar paper'), cutting upper entrance holes in the paper to insure both ventilation and flight. During my Al-

Double-deep wintered colony receives additional protein in March. As with the nucleus, protein patties were on the colonies all winter, as access (breaks in the weather) permitted.



berta, Canada visit, Medhat Nasr showed me the wrapped fiberglass insulation that they use at his facility. A four-inch sheet of fiberglass is enclosed in a heavy plastic wrap around the sides of double-deep hives grouped in fours (the pallet system). One sheet of insulation material is placed on the top of the hives, and tied down. A piece of plywood is put on the top of these four hives, and securely tied down to keep the entire wrapping system from flying away as the Alberta clippers move the snow around the hives.

This same method can be used for groups of five-frame nucleus hives as long as insulation does not block the entrance or reduce ventilation. A south-facing location helps the bees to get in cleansing flights when wind protected and the winter sun allows the microclimate around the hive to permit such activity.

The use of the polystyrene five-frame nuc boxes offers small-scale beekeepers an option for wintering with insulation. The boxes can be used all season long, or the bees and frames from wooden hives moved into the polystyrene boxes at the end of the season and fed heavily. Users like the fact that the bottom of the colony doubles as a feeder, that sugar syrup can be placed at the bottom of the feeder and the bees crawl down the frames to clean it up. In winter the syrup can be warm (100 degrees F) and cause the bees to break cluster before the heat dissipates. This might be something to try on a few colonies before jumping in with all colonies.

#### Economics of Wintering

If you purchase five-frame nucleus boxes or polystyrene hive bodies with frames to fill them (or pull down the strength of larger hives), raise or purchase queens, virgins or queen cells, and make sure each colony has between 20-25 pounds of stored honey or sugar syrup, the cost of each colony should be less than the cost of the average package bee colony or purchased nucleus in the spring. Locally Sun Belt packages sold for \$70 or more, and some nucleus colonies were selling for over \$100. In 2011 I expect to see these prices to increase again, as there is no apparent decline in the interest in beekeeping or the demand for bees. Further, many of the new crop of beekeepers is ex-

pecting to grow their operation.

In certain markets locally adapted queens in over wintered five frame nucleus hives sold for \$150 in 2010, and I expect to see these prices increase. This created a double economic incentive. First, each beekeeper needs to evaluate the cost of packages and purchased nuclei against the cost of doing the summer split and over wintered colony on their own, even with a 50 percent success rate. Second, the smart beekeeper can easily sell strong over wintered nuclei colonies at any point in the season. I will repeat my old maxim: *The money in beekeeping is in the bees.*

Off to Georgia's state beekeepers meeting in September. If you have not read Dr. Connor's book *Increase Essentials*, borrow a copy or go to his website, [www.wicwas.com](http://www.wicwas.com) to look at all the goodies listed there.

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