

Lazy Hazy Days of Summer in the Beeyard

Jennifer Berry

We take an overall look at bee health and testing for disease

DURING THE summer months, at least in my part of the world, the nectar has dried up and pollen is scarce. Thousands of bored, frustrated foragers are stuck in the hive with nothing much to do (other than collect water from time to time to cool the colony).

But just because the girls are lazing around doesn't mean we can follow suit. There is work to be done, especially if these colonies are to survive the winter. This is the time to requeen if necessary, fatten up those bees, reduce varroa populations and take care of 'issues' that may have occurred during the season.

EVALUATION

A good start is evaluating each and every colony from top to bottom. A quick suggestion before we crack open the lid. Whenever I venture into the beeyard, there's always a colony data sheet in hand. Below is an example of one used over the years at the University of Georgia bee laboratory. Having this information helps to keep track of each colony's condition.

Even if you only have a few colonies, take the time and create a data sheet that works for you. By next spring, when you're doing those first colony inspections, you won't have to rely on memory. All the information is already written down on your handy-dandy data sheets.

Checking the queen's brood pattern. Are there missed cells? Are there supersedure cells?



Claire Waring

The first check is that your queen is viable and she is producing a good brood pattern

Yard:			
Date:			
Colony	Queen (Y/N)	Honey/pollen stores	General notes

CHECK THE QUEEN

Back in the beeyard, first and foremost you should check the viability of your queen. How does her brood pattern look? Are there skipped/open cells? Do you see any supersedure cells?

If the pattern is spotty, you may want to look for other problems first, such as disease or mite infestation, before automatically assuming it is a poor queen. However, the queen could be old, poorly mated, or was not properly reared.

If you determine that the queen is past her prime, late summer to fall is a great time to requeen. If by chance you can't acquire another queen, and the colony is weak, your best bet is to combine that colony with a strong one, a nucleus or another needing a boost. Weak colonies

rarely survive the winter, so there's no sense in allowing the colony to limp along when you could have spared the bees and equipment from possible demise.

HONEY STORES

The next task is to assess the amount of honey stores. Depending on numerous factors (rainfall, temperature, etc), nectar flows can be superb one year and horrible the next. If flows were below par, or too much honey was taken for human consumption, feeding must become a priority for the colony.

Once the temperatures drop, the bees won't be able to break cluster in order to collect the food. All the syrup in the world will be useless if the bees can't get to it. And think in terms of gallons when feeding. It has been my experience that 5 gallons of a 2:1 sugar solution (2 parts sugar to 1 part water) will yield one full medium super (roughly 40 pounds).

Depending on your location, this may not be enough. If you are unsure how much honey is required to get a colony through winter in your region, consult an experienced beekeeper in your area.

CAUTION

A word of caution: feeding during a time of poor resources can be tricky, so be careful not to trigger robbing. A single drop of sugar syrup clinging to the side of a colony will attract attention, especially when nothing else is available. Once bees start robbing it becomes a feeding frenzy, with even strong colonies succumbing to the onslaught.

BROOD DISEASE

In your colony inspection examine the brood area for disease. You want to see healthy, white larva in the cells. Also look for depressed cappings or ones with holes.

Make sure that your equipment is sound. Robber bees and other unwanted visitors do not need a large gap to enter



Larvae should be a healthy white color, lying curled up in their cells

Open these and inspect the pupae. Anything slightly off-colored may be a sign of trouble (unless the pupa is in its later stage of development).

If you are unsure about what may be ailing your colony, consult a professional for diagnosis and treatment options. (See *Bee Craft America*, May 2010, page 4 for details of how to send a sample to Beltsville, USDA lab for disease determination.)

EQUIPMENT

Another colony inspection chore is to inspect your equipment.

Move frames with old comb to the outer edge so they can be removed in the spring and replaced with new foundation. Replace old, decrepit hive bodies, supers, lids, inner covers and bottom boards with newer equipment.

Bee hives don't have to be pristine little palaces; however, they do need to protect the bees from the upcoming, frigid winter weather. Plus gaping holes and cracks allow access for critters to come and go. Mice especially love to make their winter homes in a bee hive. A continual food supply plus a warm cozy environment make it a suitable dwelling.

Structurally tight equipment, along with mouse guards or reduced entrance, work well to discourage these unwanted guests.

DON'T FORGET VARROA

Queen issues, food supplies, disease, and poor equipment are all things that need to be addressed before winter temperatures descends upon us. Yet there is still one more thing we must not overlook: varroa mites. Yes, the dreaded *Varroa destructor*.

By the end of summer, mite populations are skyrocketing. Don't wait until your colonies are crashing. Once the downward spiral begins it is almost impossible for colonies to recover. August is the best time to check those mite populations! Not only is it important to get their numbers under control for the existing bees, but also for the future bees that will bring the colony into the New Year.

VARYING LIFESPANS

Speaking of the future bees, remember the average lifespan of honey bees varies considerably based on the season when they emerge. These variations have been designated into two groups of bees dubbed summer bees and winter bees. Summer bees live approximately one month, while winter bees can live anywhere from six to eight months. Winter bees emerge during August to October, depending on location. They differ from summer bees by several physiological characteristics.

Scientists have determined that the lifespan of honey bees can largely be determined by the amount of protein stored in the fat body, hemolymph, and hypopharyngeal glands. The most notable and scientifically relevant type of protein is the high-density glycolipoprotein, vitellogenin. It is loosely described as a female-specific, hemolymph storage protein, or more specifically, an egg yolk protein precursor. However, since worker bees rarely lay eggs, this protein is stored in fat bodies, mainly in their abdomens, for future use. This specific protein's relevance is largely based on its abundance in honey bee hemolymph as well as its high zinc concentration, which regulates many functions within the honey bee. Vitellogenin is also thought to be a powerful anti-oxidant, which significantly slows the effects of aging.

REDUCE MITE POPULATIONS

One of the important reasons for reducing mite populations is that higher mite populations at the end of summer or early fall coincide with the production of these winter bees. Results from research have shown that mite infestation during the pupal stage has a negative impact on bees because they're not able to accumulate the necessary hemolymph proteins, including vitellogenin, to the same extent as in non-infested bees; hence reducing their ability to overwinter.



(above) *Varroa destructor* mite levels must be reduced before the colony begins to produce winter bees (right)



Good pollen stores are vital for production of winter bees

In order for the colony to have a chance of overwintering successfully, it is imperative to reduce mite levels before the production of these winter bees. Bees rearing the winter bees need proper nutrition and development. They must be healthy enough to rear the winter bees and the bees rearing those bees need to be healthy, and so on.

POLLEN LEVELS

And one last thing, since adequate amounts of pollen must be available in order to produce winter bees, check in-coming and stored pollen supplies. If pollen stores are lacking, pollen patties are a definite plus for feeding in late summer to enhance the production of these winter bees, nurse bees, mother bees, etc. Sugar feeding alone may not be adequate.

RESPONSIBLE STEWARDS

By storing honey for energy and pollen for protein, European bees have evolved the ability to survive long winters. But unfortunately, with introduced exotic parasites, diseases, viruses and a whole host of other non-indigenous species, 'we' have thrown this whole process out of kilter. Now 'we' must be better stewards of our bees or face the consequences of finding empty spring hives devoid of life. We can be responsible stewards. ♦

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