

FALL FUNDAMENTALS

You'll do things a bit sooner in the North than we do down here, but it's the same things. Ignore them at your peril.



Jennifer Berry

So far, 2010 has been an exceptional year for most of us southern beekeepers. Years of disappointing nectar flows, due in part to water-starved landscapes, finally came to an end. Plus, as opposed to last year, when the Spring rains came this season they stopped just as the bloom began to open letting the sun shine in. Spring and Summer flows in some areas were off the charts. Beekeepers were stacking supers higher and higher as the bees tried to keep up with the flow. "So many blooms, so little time," became our motto. And the pollen . . . did I mention the pollen? Loads and loads of multi colored pellets being stuffed into any available cell. Assuming we are diligent beekeepers now, our bees could be stronger than ever coming out of the Winter and into next Spring nectar flow because for the first time in years our bees are extremely well fed. But Winter preparation in September? Absolutely! This is the time to requeen if necessary, fatten up those bees, reduce *Varroa* populations, and take care of any other issue that may have occurred during the season. So grab those evaluation sheets and let's get cracking by checking each and every colony from top to bottom.

Start by removing the lid and inner cover and look for small hive beetles (SHBs). Populations have been on the increase during the Summer months, hence some colonies may have more than they can handle. If you see these little black devils scurrying about, placing traps in your colony may be the way to go. There are several on the market and available through the bee supply companies. We've tried them all and have had the best success with the Beetle Jail Jr. (plastic, three-chambered reservoir, which snaps onto the top

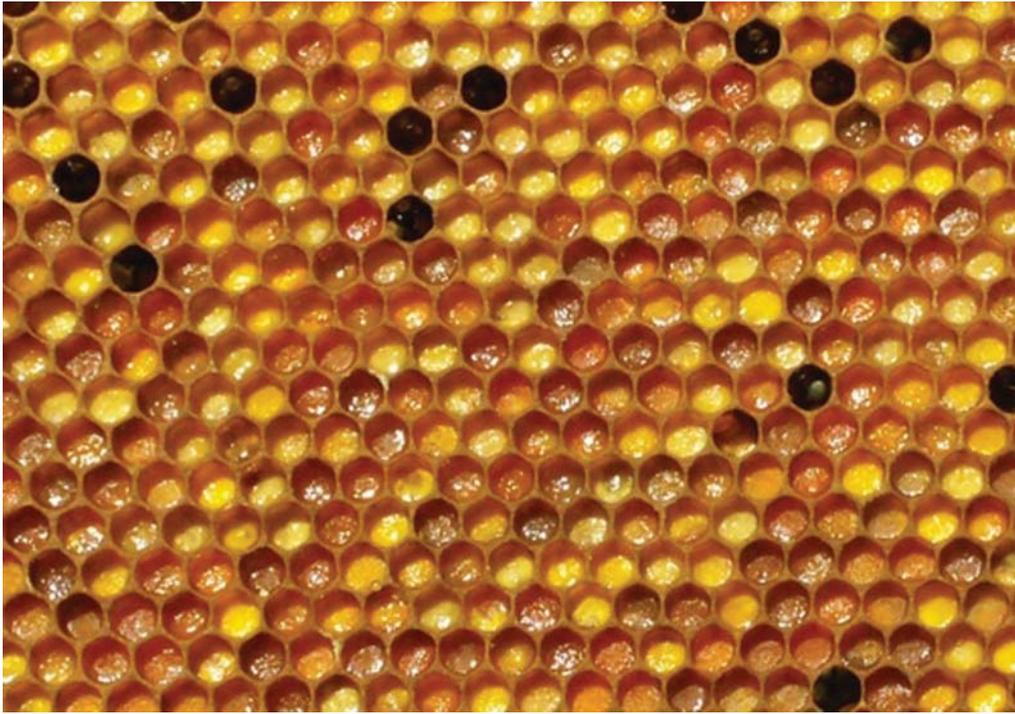


bars) and the Beetle Blaster (single chambered reservoir which rests between two frames). Fill them with oil but be careful not to fill them to the top. Only fill the reservoirs about half way, otherwise you may spill oil onto the bees when placing them into the hive and the oil will kill bees instantly. Since temperatures are still warm, beetles mainly keep to the outskirts of the hive, so place the traps where you see the most beetles. As temperatures begin to drop they will begin to migrate towards the cluster. But, for now, the majority of SHBs can be found in the upper supers, hiding in the corners and in-between frame parts. Just a word of caution:

SHBs love frame spacers because they provide little pockets into which the beetles can disappear.

The next task is to assess the amount of honey stores. Depending on numerous factors, nectar flows can differ drastically from one apiary to the next. If flows were below par, or too much honey was taken at harvest, feeding must become a priority. 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 five gallons of a 2:1 sugar solution (two parts sugar to one part water) will yield one full medium super (roughly 35 pounds) of stored food. Depending on your neck of the woods, this may not be enough. If you are unsure of how much honey is required to get a colony through Winter in your region, consult an experienced beekeeper in your area. The further north bees are kept, the more honey is required to survive the longer Winter. A word of caution: feeding at this time of year 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.

Moving into the brood chamber check the viability of the queen. How does her brood pattern look? Are there skipped/open cells? Do you see any superseded cells? If the pattern is spotty and the colony population is weaker than most, you may want to look for other problems first, such as disease or mite infestation before automatically assuming that there



are queen issues. However, the queen could be old, poorly mated, or not properly reared. If you determine that the queen is past her prime, late Summer to Fall is a great time to requeen, especially when accompanied by a flow, which is just around the corner.

Goldenrod blooms in North Georgia during September and moves south, with the Piedmont region usually experiencing a pollen flow by early October. So far, there's good ground moisture in place and plenty of sunshine, so goldenrod could mimic the Spring bloom, and be phenomenal. In years past, drought prior to, or excessive rain during the bloom meant minimal amounts of late-season pollen. Since adequate amounts of pollen must be available in order to produce winter bees (which we'll explore in a minute), check the pollen supplies. If pollen stores are lacking you may not want to wait for the fall pollen, just in case it doesn't materialize. Pollen patties are simple and easy to install and can be purchased already mixed together or in powder form. You may want to try several to see which you prefer. Another word of caution: SHBs love pollen patties. If you are seeing SHBs, portion out the pollen patties in stages (a $\frac{1}{4}$ or $\frac{1}{2}$ patty at a time) otherwise they remain in the hive too long and the beetles will oviposit into them.

If by chance you can't acquire another queen, and the colony is weak,

your best bet is to combine the colony with a strong one or one 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 eventual disaster.

Next, 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. Open these and inspect the pupae. Anything slightly off-color may be a sign of trouble (unless the pupa is in its later stage of development). Again, if you are unsure about what may be ailing your colony, consult a professional for diagnosis and treatment options.

Another late Summer chore is to inspect your equipment. Move frames with old comb to the outer edge so that they can be removed in the Spring and replaced with new foundation. Old comb is a reservoir for numerous contaminants, which can be detrimental to the developing brood and should be removed every three years. 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. Gaping holes and cracks allow access for critters to come and go. Mice especially love to make their Winter homes in a beehive. A continual food

supply, plus a warm cozy environment, make hives a suitable rodent dwelling. Structurally tight equipment and mouse guards discourage these unwanted guests.

Queen issues, food supplies, disease, and bad equipment are all things that need to be addressed before the arctic air descends upon us. Yet, there is still one more thing that we must not overlook: *Varroa* mites. By the end of Summer, mite populations may be skyrocketing. Please don't wait until your colonies are crashing. Once the downward spiral begins, it is almost impossible for them to recover. Check those mite populations today. 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. I'll get back to the importance of reducing mite populations, but first let's talk about these future bees.

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 or September, depending on location, and 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 for future use. The relevance of this specific protein 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 antioxidant which significantly slows the effects of aging.

Now, getting back to the importance of reducing mite populations. Higher mite populations at the end of Summer or early Fall coincide with the production of these Winter bees. Research has shown that mite infestation during the pupal stage has a negative impact on the bees because they are unable to accumulate the necessary hemolymph proteins,

including vitellogenin, to the same extent as non-infested bees, thus reducing their ability to overwinter. 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. And to step back even further, *the bees rearing the Winter bees* need the proper nutrition and development as well. They must be healthy enough to rear the Winter bees, and the bees rearing those bees need to be healthy, and so on.

Re-queening, appraising honey and pollen stores, checking for mites and disease, inspecting equipment while keeping robbing at bay will only help the colonies do what they do best. By storing honey for energy and pollen for protein, European bees have evolved to survive long Winters. But unfortunately, with introduced exotic parasites, diseases, viruses and a whole host of other non-indigenous problems, “we” have thrown this whole process out of kilter. Now “we” must be better stewards of our bees or face the consequences of finding more and more of our hives devoid of life. **BC**



Jennifer Berry is the Research Coordinator at the University of GA Bee lab. Contact her at Jennifer@BeeCulture.com.