The Traveling Beekeeper

Seasonal Differences

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Many Great Lake's area beekeepers who over-wintered colonies during 2011-2012 experienced excellent survival rates. In my very tiny bee operation, we lost just 2 colonies out of 20 this past winter. This is pretty amazing when compared to the previous year, when we lost 90%. In other parts of the country, the survival rate has been better, yet some folks have had heavy losses. Even a few of my Michigan neighbor beekeepers had pretty significant losses. So what is going on here?

I attribute my bees' good fortune on several things, including a remarkably mild winter with a strong warm period in March. This warm weather broke all kinds of records, ruined the sour cherry crop, and was in sharp contrast with the previous winter that lasted well into mid-spring of 2011. While it would be accurate to attribute all of this on the weather, I am very reluctant to put all of the blame on just seasonal differences.

Weather and Food Supply

After losing 90% of my colonies, last year was a rebuilding effort. We purchased five Carniolian package colonies from California, and established five nucleus colonies with single frames of brood (and adhering bees) from another beekeeper to install instrumentally inseminated breeder queens from Glenn Apiaries in California. These queens arrived May 25, 2011 and were carefully held in cages and released five days later. We grafted from these queens as the season allowed with very pleasing results. All these colonies survived the winter in double 8-frame boxes.

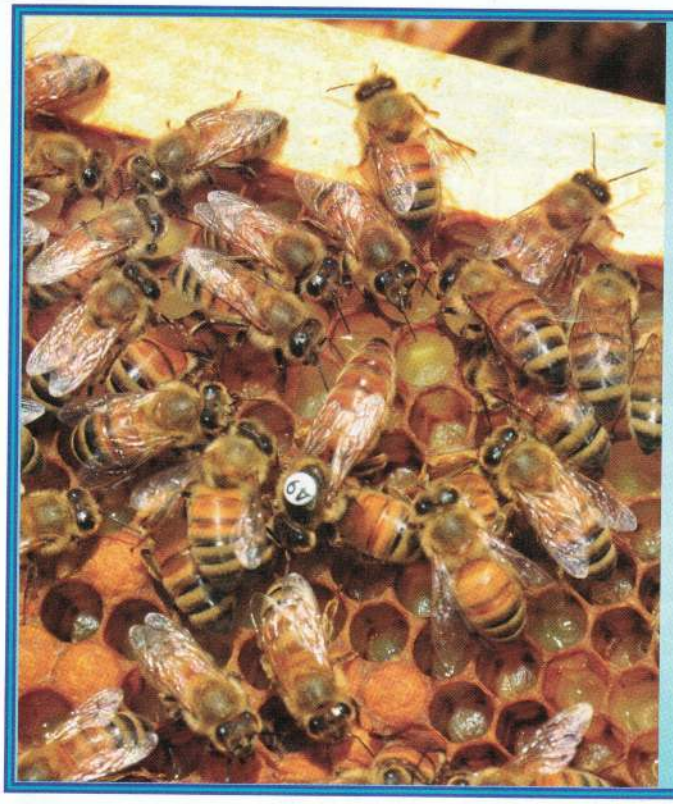
The rebuilding effort consisted of making mating nucleus colonies (5-frame nucs) boosted by additional frames of brood and food (frames of pollen and nectar) as they were found while working the package colonies. One of the surviving over-wintered colonies donated a frame of brood and bees to make up these new colonies. By the end of the season I had 20 colonies, 9 of them in five-frame equipment. The two colonies I lost were the weakest of these five-frame nucs—they were produced last in the season and had less time to build in strength.

We did not take any frames of honey away from these colonies, but used any 'extra' honey to boost the weaker of the growing colonies. This is a principle of basic beekeeping—adding frames of food is one of the easiest ways of insuring colony survival and avoids all the mess and effort of feeding sugar syrup or providing sugar fondant. Since it was a building year, I decided not to take any honey from the colonies, but to use it for food. Several of the colonies that had surplus honey still have it, providing further reserves for growth this spring. The colonies with the most stored honey were the ones with the fastest growth rate and the most brood in April. They were the first colonies to produce drones and in the greatest number.

Sources of Food

In previous articles I have discussed the importance of good nutrition for colony survival. I am convinced that one of the key factors that helped my colonies survive this past winter was that they had much better nutrition during the summer and fall of 2011. In my apiary the previous season colonies experienced a diverse protein supply from many plants. While the 2011 season started late, there was an excellent combination of

Five different instrumentally inseminated queens were obtained from Tom and Suki Glenn in California in May of 2011. Each queen was introduced with one frame of brood and bees into a five-frame nucleus (shown here). A food frame was added from the one surviving overwintered colony. After five days the queens were released from the cage. All feeding was done by frames of honey. The Boardman feeders are used to provide fresh water to the bees. These colonies face south and receive no shade, so the water helps. These breeder queens were transferred into 8-frame hives and built in strength to winter in two deep 8-frame boxes. All survived he winter. Each grafting mother provided young larvae once or twice a week from late May to early September.



Number 49, an instrumentally inseminated breeder queen from Glenn Apiaries. Note the extension of antennae by the worker bees around the queen. This reflects her pheromone production. Also note the graftable larvae in the exposed cells.

rainfall and flowering that provided a good balance of nectar and pollen. I observed good fruit bloom, basswood/sumac, spotted knapweed, goldenrod (pollen only) and aster as major sources last year. This season we have already seen a remarkable bloom from maple, willow, dandelion, mustard/yellow rocket and fruit trees (and I am writing this in mid April, so the season is just starting.) Clearly this helped the bees with their summer and fall brood rearing, drone production during the season, storage of food during the winter, and proper nutrition of the bees that went into the winter.

This was good luck.These good later season conditions affected protein production before the mild winter conditions, and is a principal reason 18 or 20 colonies survived the winter. Substitute either the excellent nutritional status of the bees or the mildness of the winter and I would be reporting on much more severe winter losses. Beekeepers in dry parts of the country appear to have lost a larger percentage of bees than I did, because the colonies did not have adequate protein nutrition reserves in the bodies of the bees entering winter.

Overwintered nucleus hive (five frames over five frames in deep nuc boxes) shows strong flight and pollen collection in mid April.

Queen Source

Three years ago I started colonies with nucleus colonies purchased from an Indiana beekeeper. These colonies contained Indiana-bred queens. These queens and their colonies have all died, a 'non-directed' selection. In 2012 I obtained Georgia packages that performed horribly. Only one of the ten packages from Georgia survived in the 2010-2011 winter. More importantly, all of the queens had been replaced by the bees by September 2010. While weather conditions were better in the summer of 2011, my results were far better with the California packages and queens. Only one was replaced during 2011, and I am pretty sure I should blame myself for that replacement. A great deal of time and effort has gone into the discussion of these Georgia queens and bees. I think the beekeeping part of the packages from Georgia was excellent. The boxes were filled with healthy, vigorous, well-cared for worker bees. The queens were large and well reared. But they did not carry any claim of mite resistance, and that, combined with poor mating conditions in the South in 2010, make me think that the problem with these queens is a combination of both non-resistant genetics and poor mating conditions.

California queen producers have been more active in the mite-resistance programs offered by several sources. Add this to the enormous boost in colony strength and drone production that occurs during almond pollination, and you have a pretty good plan for insuring packages that grow and provide support for beekeepers like me. Here we have mite-resistant queens and much better mating conditions.

We sold a number of the queens we produced in 2011, and used many ourselves. Because of the shortage of bees, we sold only virgin queens—they needed to be put into the beekeeper's hive and mated. Of course, some of the queens failed to mate—a reality we expected. This spring, we have received excellent feedback about these virgin queens produced from the instrumentally inseminated queens from Glenn Apiaries. This confirmed what I saw in the nucleus colonies I personally wintered with these queens. The queens have been productive, produced a lot of brood (with different growth patterns linked to genetic background). I want to think that these queens mated primarily with drones from the California packages (other beekeepers in the area around my bees obtained some of the same packages), and a few survivor colonies. I am pleased that five-frame nucs, wintered in double-deep nucleus colony, were bursting at the seams on the second week of April (boosted by that March warm spell), with brood on all ten frames. One example of the success of these queens is shown in one daughter of the VSH x Pol breeder queen. This colony is on its way for

a productive season as long as I provide the room it needs. I wintered the colony in 2 five-deep frame nucleus boxes. When I inspected it in early April, the bees had grown to 9 early full frames of brood, and the 10th frame was filled with a smaller area of brood, pollen and honey. As an over-wintered nucleus, it was stronger than any colony I had over-wintered in the previous two years.

Better Genetics, Locally Reared Queens, Smarter Management

It is hard to collect meaningful data with so few colonies. Yet these experiences support my long-term argument that all beekeepers should be using varroa-mite resistant queens all the time, increase the frequency of mite-resistant drones within a three mile radius, and produce daughter queens from Glenn stock and/or from mite-resistant survivor stock.

Without genetic resistance, colonies may or may not survive for a season and come out looking good the second year. But then the mite levels build, and during the second winter these colonies fail due to the buildup of varroa mites in the hive. One local Michigan beekeeper lost all of his 2010 colonies during the winter of 2011-2102, yet the nucs he produced from these colonies all survived the winter in good shape. We have been singing this song for quite awhile now, that new increase colonies provide a break in the brood cycle and allow more of the mites to be exposed outside the brood cells so workers can use grooming to reduce their numbers. My default recommendation for all beekeepers, including those starting their first colonies, is to have at least two colonies of bees at all times, and at least one increase nucleus colony for queen replacement insurance and for wintering.

Here is my checklist:

1. Maintain two or more colonies all year long. This insures better odds at having some healthy worker brood to use to boost a failing queen or let the bees replace her.
2. Establish one or more nucleus colonies during the start of the nectar flow (if you can).
3. Use ONLY mite-resistant queens or queens from survivor stock. If possible obtain these queens from a local producer.
4. Use a screened bottom board and dust with powdered sugar to monitor (and treat if necessary) mite numbers.
5. Leave plenty of honey produced by the colonies on the hives, equalizing as needed. (So far this spring the colonies with the earliest drones were the ones with the largest surplus of over-wintered honey).
6. Keep the hives in a warm, sunny location to reduce problems with varroa mites, chalkbrood, nosema and small hive beetles (these pests and diseases all seem to thrive in cool, shady locations). Add jars of fresh water in Boardman feeders during the heat of the summer.
7. If you are in an area where you must winter colonies, make sure your wintering system combines an upper ventilation/flight entrance with top insulation.

The successful beekeeper must spend a great deal of time looking at the bees in his or her apiary, determining what they are collecting food from, and carefully monitoring their success. There is an advantage in having more hives to examine to monitor trends. Changing the genetic stock of our colonies, or the way we buildup, maintain and winter our bees may be traumatic to some beekeepers. However, the success of having exploding colonies with low mite levels is something more and more beekeepers should experience. It is worth the risk of taking a chance.

Bee-sentials: A Field Guide by Dr. Connor may be ordered from your favorite bee supply dealer or directly from Wicwas Press, 1620 Miller Road, Kalamazoo, MI 49001. The price is $29.95 postpaid in the United States. If you live outside the US, please email LJConnor@aol.com for a quote payable via PayPal. Or check out the www.wicwas.com website for PayPal purchase. This full color book is ideal for use in bee classes and training programs, so contact Dr. Connor for quantity discounts to bee clubs. Some of the ideas in this article are also found in *Increase Essentials*.