

# The Traveling Beekeeper



## TIME FOR RESISTANT BEES—A PLAN FOR CLUBS

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Wicwas Press

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*You have just had a meeting of your local beekeepers club where the members voted to develop a program to put varroa and disease resistant queens (and eventually their worker bees) into every colony in the club's geographical area. That is great news. Like deciding to write a book, you are off to a good start when you decide to get down to business. Now the work begins.*

Here are a number of mechanisms of varroa resistance that have been documented or implied like hygienic behavior, grooming and physiological resistance. There are undoubtedly many more forms of mite resistance—the challenge is to find stocks that are able to resist mite development and disease infections BY ANY METHOD. There does not need to be a great deal of concern about what form of resistance you bring into your colonies, since it is a very good idea to have as many types of resistance in your area colonies as you can find. In fact, there are stocks that are resistant to mites and we do not know the resistance mechanism. Let me put it this way: I do not need to know how the Internet works to read my email! But where will you find these stocks?

### 1. Locally adapted resistant stock

Many beekeepers figure that they can cut out the bees from a bee tree or the side of a building and obtain varroa and disease resistant genetic stock. Not to discourage anyone from doing this, but the critical question is this: Where did those bees come from? Is this a newly established colony that came from a swarm from a Sun Belt package that was installed a few months ago? Time is the test here—at least as a starting point. You will need to find colonies that have survived for five or more seasons without being restocked by another incoming swarm. Bee

tree nests are extraordinarily attractive to new swarms, since the empty comb offers a fully build and architecturally perfect home for a new swarm, with a huge savings in the colony's energy output, since the bees will have less comb to build and more resources to be stored for winter.

So, to be somewhat confident about the survivor status of a feral swarm, you need to have some history about the activity of that colony. Did it die out every winter only to be repopulated each spring by non-resistant swarms from beekeeper hives? Or did the bees keep it together for five or more years, issuing swarms and undergoing routine supersedures of queens? We want the latter.

One valid approach is to collect the colonies that are alive after a head-on attack with varroa mites. Dr. Yves Le Conte, a bee researcher at Avignon, France, collected and compared such colonies to control stock and obtained lower mite loads. American-born Dr. John Kefuss did the same sort of thing with his entire beekeeping operation outside Toulouse, France. In his "007, Live or Let Die" breeding strategy, he let the mites work through his colonies for four years before the stock turned around and has been relatively mite free now for over ten years. In the United States Danny Weaver did the same in Texas, letting the mites run their course so the colonies can be productive and free of chemicals. When Drs. John Harbo (USDA, Baton Rouge) and Roger Hoopin-

garner (Michigan State University) put out a call for survivor stock, they collected queens from colonies that survived the head-on mite attacks. That stock is now called the VSH (Varroa Sensitive Hygienic) stock and in my opinion is one of the least appreciated and most underutilized of the resistant lines of bees available to beekeepers. Why? That is a darn good question.

So it goes. There are a number of sources advertising in the journals, and even more that do not advertise (or do not need to advertise). Your club officers and members are wise to review the articles by M.E.A. McNeil in the March and April 2009 issues of the *American Bee Journal* for a detailed discussion of the various resistance programs that have had their origins in survivor stocks. We need to stop producing queens from non-resistant stock: All colonies should demonstrate some type of mite and/or disease resistance or be put into a 007 program so that resistance can develop naturally.

It is true that some hives may have been isolated from a high level of mite attack because of geography and low numbers of other colonies. Bottom line—any colony selected as 'local' must be challenged to see its level of mite resistance. If a colony or its daughter colonies die overwinter they flunked the test. If a colony collapses in the fall months after demonstrating a full range of disease and viral symptoms associated with Parasitic Mite Syndrome, that colony

flunked there. You want to obtain queens from a source that maintains low mite levels at all times, based on some standardized testing method. I like the powdered sugar/screened bottom board method of testing. This past season I have seen the ease of getting quick mite counts using the powdered sugar method. From the time you remove the lid of the hive to the final mite count, it only takes my students and I a few minutes (2-4) per hive to apply the powdered sugar and return to count the mites.

### 2. Stocks adapted for somewhere else

No matter how resistant they might be to varroa mites (and I am not saying that they are), I would not ask my buddy Jimmy in South Texas to send me some of his naturally mated queens. Why? Because he keeps colonies in an area where there are lots of African colonies, feral colonies in the brush and buildings, and I do not want to bring in stock that I know will cause some problems in a urban and suburban beekeeping territory and might require me to put on a bee veil. I do not know what the fitness of African bees would be in the North, but in my opinion, it not worth finding out.

But if someone in South Florida, South Texas or Arizona has developed a gentler strain of African bees that is both mite resistant and socially acceptable (easily managed without as much concern about stinging behavior), I would encourage Jimmy to get a few breeder queens and produce daughters and evaluate them. It is time we start doing some serious stock improvement with African bees in the United States. What are we waiting for? In Brazil and Mexico breeding programs have significantly improved the manageability of African bees AND made them less defensive.

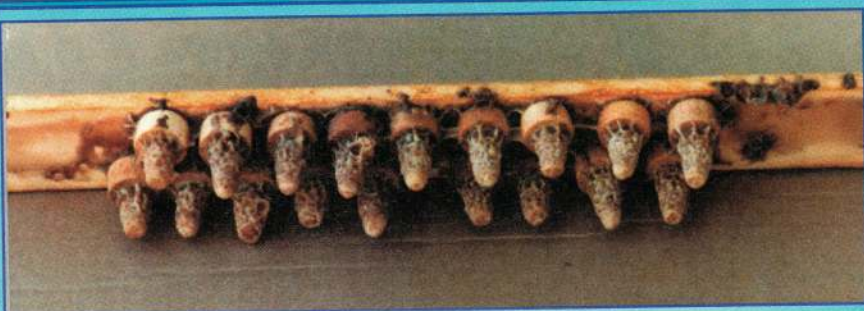
### 3. Documented resistance (of any type)

With the well-documented biological advantages of multiple mating of queen bees with a diverse drone population, we benefit by having as many documented varroa resistant lines as we can get within the mating area of our queens. I wrote about this in the last chapter of my book *Bee Sex Essentials*. Borrow a copy if you must, but you need to be familiar with the concept of multiple drone lines for healthy, disease and pest resistant colonies. Go to the website of Dr. David Tarpy at North Carolina State University and read some of his research papers on this subject.

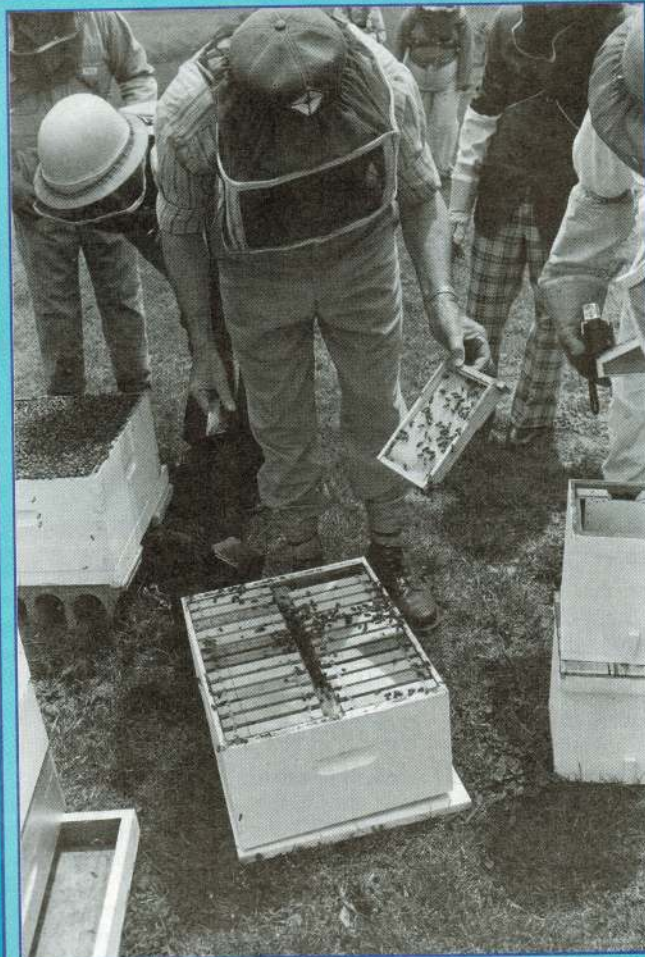
#### Developing a Club Plan

Every bee club concerned about improving the stock in its area should form a small group (committee, task force or coffee bunch) that gets together and weighs the information and stock available for their area and have a plan written out they shared with the members of the organization. The plan should be pretty darn simple, but direct. I would like to include these points:

We will evaluate queen stocks by using a simple standardized testing method to eval-



Frame of completed and capped queen cells. Raising your own disease-resistant queens can be fun and rewarding.



Develop a club plan. Every beekeeper in the club should obtain queens from a disease-resistant stock.

uate mite loads. I personally think the ether roll kills too many bees, that soapy water technique is too time consuming, and the powdered sugar roll takes more time than it does to test an entire colony equipped with a greased tray in a screened bottom board. My experience with fifteen first-year beekeepers this past season has convinced me that the screened bottom board and powdered sugar method is not only doable, but the beekeepers like doing it (rather than using chemicals) and benefit by doing something proactive for their bees that gives them a numerical comparison of each colony. The bees we used were a generation removed from the Purdue stock that Greg Hunt and Krispn Given developed in Indiana. Our

mite counts were variable from colony to colony because these queens were open mated to non-resistant stock. Yet the counts were always much lower than old-style susceptible bees. I noted in last month's article that these were not necessarily hygienic bees (we had a problem with chalk brood in some colonies, and you cannot have hygienic bees and chalk brood). I suspect the Purdue stock possess some other methods of mite resistance. Fantastic. We need to keep up these strategies for resistance at all levels. Queens that produce daughter colonies with extremely high mite loads when other queens have low counts—those queens should be eliminated from our hives. Pinch their heads and throw them into the underbrush with a

proper good riddance. We are way past the point of sentimentality.

Every beekeeper in the club should obtain queens from an improved stock using one of a number of methods: direct purchase or gifts of splits from resistant colonies, 48 hr queen cells, ripe queen cells, virgin queens or mated queens. It does not matter what age or form that queen is in as long as she carries the genes we seek for resistance.

In the first year (2010) every beekeeper should be encouraged to put these queens into their colonies. Some clubs may have members who are resistant to this concept and in the first year the peer pressure should be turned down. The point of convincing will come from the reports from members. Every beekeeper should report the stock they are using and the mite count (how it was collected if it they used a method different from the club's standardized testing method). In the second season (2011) the club should show the entire membership its collective success, and failures, at obtaining low mite counts. As the second spring arrives, members may report great success in wintering or tremendous losses. Mentors will be needed to coach the new members (and maybe a few old ones) on the practices of swarm control, bee feeding and other basic beekeeping 101 concepts.

Ultimately beekeepers successful with this system should be encouraged to share their bee stock with others, either as a gift to club members or for commercial trade. In a local club there may be 1 to 10 members who are in a position to share resistant stock. But if 10,000 beekeepers nationwide start developing this program in 2010 and their resistant queens are moved around the country, we would take a huge step toward eliminating the genetic diversity gap that has developed since varroa mites appeared 25 years ago.

I would like larger clubs to be somewhat systematic about getting members to obtain queens from every resistant line they can find, putting together a full line of alphabet soup stocks with geographic stocks (foreign and domestic), as well as some cutout queens with remarkable behavior. While I was feeding colonies this fall with my helper Cathy King, we noticed that some colonies were vastly superior to others, even though the queens should be sisters and of similar genetics. On one colony lid she had written "PET ME." These bees were amazingly quiet on the combs and were responding nicely to the feed we had given them. Our season on the Farm outside Kalamazoo was far from wonderful, and we had had more than a few problems and challenges in the hives we set up this spring from Purdue stock nucs. It is nice to enter the winter months with some hope that the bees you have may actually survive the winter, and will be able to produce resistant daughters in the next season. That is the fun part of beekeeping, isn't it?

Dr. Connor finished his latest book, *Queen Rearing Essentials*, and it should be available for shipping in December or

January. With 100 pages and 167 color photos, it will help the members of local bee clubs learn all about starter and finisher colonies. Check for the ship date and place your order at [www.wicwas.com](http://www.wicwas.com), or contact your local bee supply branch for a copy.

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