ARTIFICIAL SUPERSEDURE: A BEEKEEPER'S STRATEGY FOR LEVERAGING THE HONEYBEE'S BUILT-IN SURVIVAL MECHANISM TO OVERCOME VARROA

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On July 24, 1908, G. M. Doolittle wrote,

> "As this is the season of the year when the bees do most their superseding of queens (it seems so natural to them). My loss in using this plan will not average more than one queen cell out of twenty given." (*A Year's Work In An Out-Apiary*, 1908, A.I. Root Company, Medina, OH, page 75)

The concept of artificially superseding queens that would not make it through the winter was presented by G. M. Doolittle in his book a hundred years ago. Today, artificial supersedure refers to increase, swarming, or cell building but it can also be used to refer to outbreeding mites so that colonies can successfully overwinter.

I discovered that the colonies that survived the winter here in Michigan were the ones that superseded their queens in July the previous year, and not because the queens were genetically superior. These colonies survived because the mites were reduced to a minimum by the pause in brood rearing in the same way that Africanized bees survive the mite and increase via frequent swarming. After the break in brood rearing, when 5-day-old larvae are again available for the fertile mite, all the mites instinctually enter the cells simultaneously and are then trapped when the cell is capped. The single larva isn't enough food for all the mites trapped within the cell and all perish. The bees respond hygienically by removing the carnage from the initial brood cycle. The varroa population is greatly reduced by this unexpected biological assault to which it cannot become resistant. As if this weren't enough, the mites are further outnumbered by the bees when the newly-mated, prolific queens continue to outbreed them going into winter.

Since I discovered this, I have been artificially superseding my hives every July with success and without chemicals. My bees benefit from not having to exist with the side effects of strong chemicals such as miticides. All northern colonies can be artificially superseded this way every July and those in the south every 3-4 months to naturally control the varroa mite population.

And, you might ask, with what queens do I artificially supersede my hives? From where do I get my stock? The answer is that I rear my own, high-quality, never-been-shut-down queens by using a technique I now call On-The-Spot queen rearing, or OTS, as described on my website

and historically documented in my booklet, IMN System of Queen Rearing, which I published back in 1988 and is now available free on my website www.mdasplitter.com. For twenty-five years now, I have had the pleasure of watching my bees rear their own queens via this method which never ceases to produce wide, clean, abundant brood patterns at a rate that still astounds me. The vigor of these queens is remarkable and might be due to the fact that with OTS, there is never a pause in larval nutrition, the queen is not caged and shipped which shuts down egg laying, there is never a genetic clash between the queen and the hive within which she emerges, and, because the queens aren't lethargic from chemical side effects, they can take strong, long, mating flights as nature intended to obtain the greatest genetic advantage. How would you rate a good queen?

Over the years I have received many questions about my technique such as, Will OTS cause my bees to become aggressive over the long term and lose their easy-to-handle qualities? Will OTS produce an intercaste, or inferior-quality queen? My answer to these questions is that the proof is in the pudding. My queens perform with excellence and are of no cost to me. My hives overwinter successfully outdoors (above 90%). My bees are healthy and full of vigor. Dr. C. C. Miller experienced the same, successful results which he documented in his book, *Fifty Years Among The Bees*, and who, I ask you, has studied bees longer than Dr. C. C. Miller?

So here's the good news: We have the privilege and advantage of knowing that artificial supersedure can increase the survival of bees that are managed in the USA and throughout the world without the use of chemicals. And we as beekeepers have the option to utilize this knowledge. Thank you, G. M. Doolittle. Thank you, Dr. C. C. Miller.