

## PRACTICAL IMPLICATIONS FOR BEEKEEPERS

While the central claim made in the paper "***A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder***" ("Science", 09/06/07) is that a specific virus is a "significant marker for CCD", that won't help us to diagnose our hives even if it turns out to be a valid claim. The virus is described as "Israeli Acute Paralysis Virus" in the paper, but even the identification is uncertain at this time. It may be a variant of "Kashmir Bee Virus". It doesn't matter either way, as there aren't any visible symptoms that we beekeepers can look for in our hives.

The familiar litany of generic advice was offered to beekeepers by Jeff Pettis of the USDA-ARS Beltsville Bee Lab in the press conference held to announce the paper: "***Maintain healthy colonies. Keep parasitic varroa mites [and] Nosema levels low, do the things that beekeepers know how to do to manage healthy colonies. Because if we're right, that there's multiple factors involved, most of those factors... beekeepers may be able to manage... even supplying supplemental nutrition when need be.***"

This advice is much like telling us to get lots of sleep, drink plenty of fluids, and eat our vegetables as a way of avoiding being hit by meteors, but let's take Jeff seriously, as he really doesn't have any better advice to offer.

### Varroa Levels

Not surprisingly, varroa remains the bane of the beekeeper's existence, and there is no question that high varroa levels result in multiple viruses spreading throughout the colony, the apiary, and even to other colonies nearby. We have to do our best on this. We have multiple treatments, so rotate those treatments.

### Test And Treat For Nosema!

Although the authors dismissed Nosema as a possible correlating factor for CCD, their tests found Nosema to be surprisingly common. Nearly universal. Every apiary affected by CCD was found to have Nosema, and 90% of them had both types of Nosema at the same time. Even among apiaries said to be "free of CCD", 92% of them were found to have Nosema ceranae, and 47% of them had Nosema apis.

	<b>Apiaries With CCD</b>	<b>Apiaries Free Of CCD</b>
<b>Nosema apis</b>	90%	47.6%
<b>Nosema ceranae</b>	100%	92.1%

With numbers like these, odds are you need to seriously consider sending some bees in for analysis, or screening for Nosema yourself with a cheap child's microscope. Fumagillin works equally well in treating both types of Nosema, and despite decades of use, Nosema have not become resistant to it. (See Kim Flottum's May 2007 *Bee Culture* article, "***Know About Nosema ceranae***" for

details.) Nosema being found in nearly every apiary tested is very significant news for beekeepers. We can do something about Nosema, and while treating Nosema may not prevent CCD, it certainly can't hurt.

## **Reduce “Stress”**

What sort of “stress” could we eliminate from the lives of the bees under our stewardship? Accomplishing all the other tasks in this list will go far in reducing stress, but making the bees' environment more livable will also help. One big step would be to get serious about replacing old brood comb on a regular basis.

## **Getting Down To Brass Tacks On Stress**

My own approach is typical, and requires no recordkeeping at all. I buy flat metal thumbtacks in colors that match the queen marking colors, and use them to track the age of each comb. Every year, I replace 2 of 10 brood combs, pulling the combs that match that year's queen color, and replacing them with frames that have been cycled through a solar wax melter and reworked. With this approach, all comb is replaced every 5 years.

## **Wooden? Where?**

Colony stress can also result from your reluctance to scrap those rotten brood chambers that have unintentional entrances at every corner. Admit it, we all tend to keep using woodenware long after it should have been recycled into firestarters. Too many entrances, and the colony has guard bees patrolling right in the midst of nurse bees. Imagine a SWAT team bursting into the middle of a neonatal intensive care ward, and asking everyone who walks by to show ID. Someone's bound to get intimidated, if not hurt. Force the SWAT team to keep bumping into the nurses all day, every day, and that would be some significant stress for all involved. Both sets of bees are very busy, and consider their tasks to be “a priority”.

I should offer a hint about using old brood chambers and supers as kindling in your fireplace – a little bit goes a long way. Old bee boxes are very dry, and tend to be well-coated with a thin sheen of propolis “varnish” on all inner surfaces. The flames that result are impressive. Break or cut them into small chunks, and use them with care in the fireplace or wood stove.

## **Nutrition**

I can't really offer much about nutrition that won't start multiple arguments, except to point out that some droughts require one to feed one's bees. Some beekeepers feed syrup in the fall, some don't. Some feed pollen supplements every fall, and others never do. There's no easy way to check pollen for protein content, but one can at least heft colonies and know which ones are “light” going into fall. When in doubt, feed your bees.

## **Hospice Yards?**

Given that there is no known method of diagnosing CCD before the affected colonies are doomed, and no way to “save” a colony showing CCD symptoms, one might want to remove colonies that look weak from apiaries that are otherwise filled with strong colonies. It is generally agreed that CCD can spread between colonies, even though the mechanics of the process are still unknown, so maybe we should start our own “quarantine” yards for weaker colonies. (That faint sound you hear is me, grasping at straws for pragmatic approaches in the absence of conclusive facts. We know isolated operations have been safe from CCD, so it seems reasonable that we can each create a certain level of isolation between clearly healthy and weak hives.)

## **Know Your Neighbors**

If you pollinate, check with the grower and find out who is placing his hives near yours in adjacent fields. Keep in touch with your fellow beekeepers, as their problems are likely to become yours, and visa-versa.

## **Know Your Hives**

Get serious. Go buy some stencils and come up with a hive numbering system if you have more hives than you can count on your fingers. It is likely that your record collection is better organized than your beekeeping records, so buy a spiral-bound notebook while you are at it, and don't rely on the same memory that can't even remember where you put your car keys two days a month. Keep track of where you placed which hives, and what you did to which hive when. Yeah, I'm being insulting here. Tough. I'm suggesting that if we all simply kept copious notes over the next year, we might have information of value to those who are trying to solve this problem for us. This thing doesn't seem to be going away by itself, and we have no idea what might turn out to be important. So start writing stuff down. Even things that you don't think are all that important. The bees you save just might be your own.