# THE HIVE TOOL

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## NEXT CMBA MEETING

You are invited to hear and see a special presentation on **Tuesday evening, January 5**, at 7:30 p.m. about the world federation of beekeepers which is called Apimondia. Jeremy Barnes, the president of York County Beekeepers, attended the Apimondia meeting this fall in Montpellier, France, and he will be bringing a DVD he prepared on this subject.

**Jeremy at Apimondia with a BIG SMOKER!**

Apimondia is the bi-annual conference of the International Federation of Beekeepers Associations, which promotes scientific, ecological, social and economic apicultural activities worldwide. The headquarters are in Bucharest, Rumania; the first conference was in 1897. The next two conferences of Apimondia will be in Buenos Aires, Argentina (2011) and Kiev, Ukraine (2013.)

Jeremy spent the first 41 years of his life in Rhodesia (now Zimbabwe) and then South Africa, where his prime acquaintance with bees was throwing himself flat on the ground (normally a cricket field) as a swarm of Africanized honey bees flew four feet above the ground and very much like a dark cloud. He wrote,

"We knew we could not outrun them and that jumping into a pool or stream did not help either. My other memory is the log hives that the local Shona and Ndebele people would put in trees, normally baobabs, to attract feral hives.

Jeremy moved to the US in 1991 and began keeping bees ten years later after completing the short course at Oregon Ridge with Jerry Fischer. He succeeded Jeff Davis as President of the York Co Beekeepers' Association in 2006.

At the Pennsylvania State Beekeepers Association Conference in 2007, Jim Bobb spoke about his visit to Apimondia in Melbourne, Australia, and Jeremy was inspired to attend the next such event which took place in Montpellier, France, in 2009.

On Jan 5 Jeremy will share a little of what it was like to be in the Languedoc Rousillion area of France and in Montpellier with some 10,000 other beekeepers from across the world, in the hope that one or two more local beekeepers will take advantage of this remarkable experience in two years time."

Jeremy Barnes is a warm-hearted excellent bee ambassador! Come hear him speak and learn about the varied world of beekeeping! Consider attending an Apimondia conference for your next vacation!

## CMBA CHRISTMAS DINNER

The Christmas potluck dinner on December 6 went ahead as scheduled, even though the first snow of the season fell that afternoon, making attendance at the dinner slimmer than usual. Thanks to Eric Langston for his planning and hard work. All who attended were well fed, and brought home door prizes of poinsettias and bee related items. Alex Flanagan gave bee themed magnets, large CMBA cloth shopping bags and mugs, and was the source of some of the door prizes.

## LESSONS LEARNED FROM 2009

Barbara Gruver

Keeping records each time you go into your bee hives is helpful. We have tried separate small pages for each hive, but now prefer to use one standard binder size page to list what we have seen in one day's inspection. We note the date, the temperature, the time of day, what bee forage plants are blooming, and who is doing the bee inspection, and specific comments for each hive. We note whether we see the queen, how much brood there is, how much honey and pollen, whether new nectar has been added, and if there is equipment that needs replacing or to be added. We note if bees seem unusually agitated or calm, and if a hive is prone to using lots of propolis to glue the hive together, whether a hive is using an upper entrance, and how much landing board activity there is. We sometimes note the color of pollen that bees are bringing in.

In March-April, we note the strength or weakness of each hive, and combine or move frames as needed. In May-June we look for swarm cells and note what we are doing about them. We note whether a hive is strong enough to divide. In July-August, we note how

full the supers are; when they are ready to extract, we always note that and plan our date. From August-October, we note how ready for winter is each hive, and what we need to do to make it ready. In the same period we check for mites, list our results, and re-check and treat if necessary. On a rare, warm day above 60' in the winter, we check the hives for sufficient bees and adjacent stores of honey and pollen.

Mainly we use our notes, to help us make decisions about what management is needed next for each hive. But it is also useful to review a whole set of notes for the beekeeping year and to draw conclusions on what went well, and what mistakes were made. So I have just re-read our notes from March 8-October 28, 2009. I will share my conclusions!

1. It helps to insulate a small hive. In 2009 in January, we used pieces of re-cycled 1" R-Max foam insulation board which we cut to fit as separate panels on top and on 3 sides of each hive. The front is left un-insulated. The 3 side pieces of insulation are held on with a bungee-cord. The lid piece of insulation board is held on with a brick. The purpose of the insulation is to enable the bees to have a less tight cluster, and to reduce the number of bees needed or the amount of honey needed for the colony to survive. On March 8, a 68' day, we removed the insulation from two strong hives and left it on one small hive with only 3 frames of bees. Three cool weeks followed. On March 27, the small hive had increased to 4-5 frames of bees, while its strong neighbor had weakened.

2. Our one Russian hive refused to draw foundation even with a strong nectar flow.

3. The Russian hive on a scale gained 74 lb. in 31 days, April 15-May 16. (April 15 was when we first put the Russian hive on the scale. See photo below.)

4. March 16-May 16 was a period of much nectar flow from fruit trees. You must be ready to super and to check for swarm cells!

5. Do not cut off swarm cells unless you know you have no use for them, and you have young excellent queens. Instead of cutting them off, make one or more nucleus (nuc) hives and use these "queen nurseries" as insurance.

6. Use a checkerboard pattern of filled and empty frames of nectar, to avoid a hive from feeling honey-bound. For the Russian hive, an undrawn frame was useless—we should have taken drawn frames from another hive.

7. Losing a queen is a 6-7 week set-back Losing queens on May 19 was a disaster! Our Russian hive swarmed on May 19. We caught the swarm and hived it. But soon we discovered the swarm was queenless. I took about 10 swarm cells that I found in the Russian mother hive and gave them all to the swarm. (I didn't look for the queen in the original hive which was a mistake.) Two weeks later, we found that both the Russian mother hive and her swarm daughter were queenless. What happened to all those swarm cell queens? We bought 2 new Russian queens locally. About 2 weeks later, I again found what I thought were swarm cells and I cut them off. (Actually these were probably supercedure cells.) One month later, we realized that the original Russian hive was queenless again. This time, I gave it a frame of eggs from an Italian hive, and they successfully raised a new queen. (So it is no longer a Russian hive.) It was now August! And the Russian swarm hive, although Russian queen-right and full of brood, did not have enough honey for the winter! Meanwhile our 2 Italian hives made 256 lbs. of honey!

8. If you take off supers of honey and cannot extract it immediately, you can freeze the honey supers (in a large plastic bag) in a large chest freezer, but let the honey cool to house temperature before putting it in the freezer. When ready to extract, let it come to room temperature for a day. The purpose of the plastic bag is to prevent condensation water from getting into the honey.

9. Certain periods of time are crucial for beekeepers. Try not to plan vacations in April-May, nor September-October.

I'd love to hear what you learned from reviewing your lessons from 2009! Please email me at abgruver@verizon.net

## Making Your Beekeeping Pay for Itself

By Steve McDaniel

This was a five-minute talk given at the Nov. 21, 2009 MSBA meeting at the Maryland Department of Agriculture, Annapolis, MD.

The title of this talk is not "How To Make A Million Dollars" or "How To Become A Commercial Beekeeper," because I don't know how to do those things. As small-scale beekeepers, we all invest in our beekeeping, buying equipment, woodenware, queens, nucs, sugar, and so on, and it would be nice to have it pay for itself. There are many ways to do that, so without going into too much detail on any of them, here is a list of possibilities. Doing one or two of them can cover your costs nicely. You might even show a profit!

- Honey—wholesale or retail (more on this later)
- Pollination services: you can move two or three hives into an orchard or farm
- Nucs or packages: make them yourself or buy and resell
- Equipment, woodenware: make it yourself or buy and resell
- Pollen, propolis, or beeswax: collect them yourself or buy and resell
- Cosmetics made from beeswax: make them yourself or buy and resell
- Candles, ornaments, flowers, sculptures, and other items made from beeswax
- Bees for apitherapy
- Prizes at honey shows and fairs
- Bee-themed crafts
- Queens you raise yourself or buy and resell
- Preserved bees as biological specimens
- Photographs as wall art or for publication in magazines, calendars, etc.
- Writing articles or books for beekeepers or the general public
- Speaking about bees to beekeepers or the general public
- Managing hives for others
- Removal of bees from walls, collecting swarms
- Consultations with beekeepers
- Teaching classes and workshops
- Inventing equipment, gadgets, or chemicals:e.g., SHB traps, solar wax melter, Bee Quick
- Build websites for beekeepers, bee associations
- Of course, selling honey is the most obvious and most common way of making some money from beekeeping, but where do you sell it? Here are some ideas:
- Honey stand at your house
- Wholesale to a farm stand or local market or specialty store
- Internet/mail order via a website
- Friends and acquaintances
- Neighbors
- Co-workers
- School (your kids' or local school)
- Church (use as a fundraiser, donating part of the proceeds to the church or a pet project)
- Club meetings
- Places you frequent: bank, post office, hair salon, etc.
- Yard sale/flea market
- Farmers' market
- Craft show
- Christmas show
- Street festival, e.g., Hampstead Day, Manchester Day
- Honey Festival
- Convention or trade show
- Lectures, classes—take some honey to sell to the audience

As you get to be known as the "bee lady" or the "bee man," people will seek you out. Don't be shy about providing them with your excellent honey!

## Immunity & Resistance In The Bee World

By Joe Traynor

Reprinted from Bee Culture December 2009

Humans are immune to a number of bugs, either through long-time exposure or by vaccination. Antibodies (developed through either exposure or vaccination) protect us from being overcome by a disease. The introduction of new diseases into the indigenous populations of the New World by disease-carrying Europeans decimated native populations - some historians make a good argument that these diseases changed the course of history (just as Varroa has changed the history of beekeeping). With time, the natives developed requisite antibodies and their populations rebounded. Visitors to Mexico (and some other countries) often get sick if they drink the local water but this same water has no effect on the local population because they have built up an immunity (or at the very least a high degree of resistance) to the bugs in the water through generations of exposure.

Home-schooled children are more likely to get sick in college because they have had limited exposure to the myriad of bugs prevalent in public schools - their systems have limited antibody resources. Conscientious mothers that spray home surfaces with disinfectants may be putting the brakes on immune system development in their offspring. And makers of these

anti-germ sprays (and of hand sanitizers) may be doing more harm than good by neutralizing a tried and true method of boosting immune systems (just as chemical treatments for Varroa and other pests and diseases impede resistance development in honey bees and increase tolerance to the chemicals in the target pest). Currently, health officials tell us that older people are less likely to get the H1N1 flu virus because their systems contain antibodies developed years ago by exposure to similar viruses back then. For young people that come down with H1N1, it's not all bad: they could well be protected from succumbing to a super-virus 50 years hence.

Compared with humans, honey bees have a relatively fragile immune system. A less than robust immune system means greater susceptibility to pests and diseases. A highly developed immune system, however, diverts resources that might otherwise be used to benefit an organism - in the case of bees, more brood rearing and more foraging for pollen and nectar; there is no free lunch. Honey bees use a number of strategies to compensate for deficiencies in their immune systems:

1. When sick, bees altruistically die in the field so that they do not infect their housemates.
2. House-cleaning bees remove dead or dying bees (inoculurn sources) from the hive.
3. Bees are good house cleaners, a trait that can be amplified (e.g., hygienic bees).
4. The anti-microbial properties of pro polis protect bees.
5. House bees are relatively healthy, nutrition wise. Old foraging bees die, depleted of nutrients. Nutrient reserves are diverted to young bees, and these reserves provide house bees and over-wintering bees a degree of resistance to diseases.

Honey bee caretakers (beekeepers) also allow bees to perform at a high level by providing bees with good pasture (easier said than done) and/ or supplemental protein feeding (although no supplemental feed is as beneficial to honey bee health as a multi-colored variety of natural pollens). Beekeeper control of pests and diseases - foul brood, tracheal mites, nosema and especially Varroa mites - also allows honey bees to remain healthy in spite of their relatively fragile immune systems (providing beekeepers rotate comb on a regular basis to prevent a buildup of harmful chemicals).

Like humans, honey bees have been challenged by viruses for eons. All bees carry viruses and this virus complex changes over time as new viruses enter the system and old viruses mutate. In 1980 BV (Before Varroa) when a new virus entered a honey bee population, the spread of the virus was gradual, allowing bees ample time to come up with methods of neutralizing the virus, including incorporating resistance into the bee genome. Varroa mites, acting as contaminated hypodermic needles, short-circuited this natural disease-fighting mechanism, overwhelming a colony by rapidly spreading viruses throughout the colony and then throughout an apiary. Honey bees had no defense against Varroa mites and current Varroa-control measures are less than stellar.

Without an effective transmission agent it is difficult for a disease to establish a toe-hold in a population. The most effective method of controlling some diseases is by attacking the vector that transmits the disease, e.g., killing mosquitoes to control malaria. A consensus is forming that the combination of a virus (or viruses) + Varroa (and possibly nosema ceranae) is the cause of current problems with honey bees. Add a robbing environment into the mix and you compound the problem. Without the Varroa vector, viruses would cause far less damage. For example, IAPV (Israeli Acute Paralysis Virus) is widespread in Australia but is not considered a major threat (Australia does not yet have Varroa). Some feel that the combination of IAPV + Varroa represents a threat to U.S. bee colonies and they make a good case for banning the importation of Aussie bees (too late now). Viruses are constantly mutating and some feel that the Aussie strain of IAPV is less deadly than other strains and therefore Aussie imports are not a problem. Or, perhaps, incremental exposure to IAPV by Aussie bees gave them sufficient time to incorporate immunity, or at least some degree of resistance, into their genome. There will always be new viruses coming down the pike; develop resistance (or a vaccine) against one, and another will pop up and take you down.

Some viruses inflict considerably more damage on a population than others. The 1918 flu virus was a superbug that killed millions of people and on a scale of 1 to 10 (10 being most severe) would rate a 10. Most flu viruses would rate a 1 or 2; H1N1 might currently rate a five (subject to change after it has run its course). Past honey bee viruses that caused disappearing bees or collapsing colonies could be similarly rated. Assuming a virus caused CCD in 2007-2008, affected beekeepers might rate this virus a 10. Apiaries that did not (or have not) come down with CCD in recent years likely either were isolated from a virus source or enjoyed robust health when exposed to the virus (and yes, pesticide exposure would compromise colony health). Like humans, honey bees carry chronic viruses and such viruses flare up when the health of a population is impaired. DWV (Deformed Wing Virus) appears to be a chronic bee virus and one that is often associated with collapsing colonies (and with Varroa).

How severely a virus affects a population - whether humans or bees - depends on three factors:

1. The degree of exposure to (or isolation from) infected individuals.
2. The general health of the population (esp. nutrition wise).
3. The age distribution of the population (in general, the elderly are more susceptible).

For honey bees, the population of a vectoring agent - mainly Varroa, possibly nosema - is also a factor. In the presence of Varroa, honey bees must wage a battle on two fronts. An analogy is a man holding his own against a bear attack but succumbing when he is simultaneously attacked by a pack of wolves. Fighting both a virus and Varroa is a daunting task for honey bees. In the case of honey bees, a frontal attack on Varroa should be more productive than attacking viruses themselves.

Any breeding program that incorporates resistance to mites and diseases comes at a cost. Take an extreme example: posting a guard bee by every brood cell to immediately target and kill Varroa could develop a Varroa-free population, but at a significant cost - those guard bees would otherwise be foraging bees. We all face tradeoffs in life - work vs. family, mind development vs. body development - honey bees are no different: invest too many resources in combating Varroa and colony production will suffer. One strategy for bees to develop Varroa resistance is by producing minimal amounts of food - bee brood - for the mites. Reduce brood too far though, and consequent lower worker populations will mean much lower honey production. Biologist Raphael Sagarin put it succinctly: "organisms inherently understand that there is risk in life. The idea that we can eliminate these risks would be selected against quickly in the natural world since any organism that tried to do so would not have enough resources left for reproduction or feeding itself." (New Scientist, February 9, 2008, p.49). Building a bee with total immunity to pests and diseases would come at too great a cost to the bee.

The Holy Grail in the war against Varroa - immunity (or 100% resistance) - is likely impossible. U.S. bee breeding programs aimed at Varroa resistance have been hampered by the ever-narrowing number of genes in

U.S. bee populations to the point where some feel that our bees are excessively inbred (assuming the relatively recent introduction of African and Australian genes has not been beneficial). The recent importation of drone semen from promising stock in other countries should greatly improve our gene pool*. The current success of Marla Spivak's Minnesota Hygienic stock shows that good Varroa resistance (and resistance to brood diseases) can be obtained without significantly sacrificing honey production. MN Hygienic bees recruit potential foragers for cell cleaning (and mite-biting) duties but apparently not in great enough numbers to affect honey production.

Hygienic bees don't eliminate mites but reduce mite numbers to levels that can be more easily controlled with minimal (or no) use of chemicals. Yes, these few mites can still carry and transmit viruses, but hopefully mite numbers will be low enough to prevent a virus epidemic in an apiary. Currently, the best method of protecting bees from viruses is the same as protecting humans from the HINI flu virus: isolation from others that might be carrying the virus. Admittedly, this is far easier said than done for both bees and humans.

Rather than developing 100% resistance (or immunity) from Varroa, a frontal attack on this insidious pest is preferable. Promising work on Varroa control includes using odors to lure Varroa to their doom or to confuse them so they cannot locate brood cells. Breeding nonpathogenic Varroa or inserting a suicide gene into the Varroa genome would certainly have benefits. Work to develop additional chemicals to control Varroa should continue (although formic acid treatment for Varroa control is not new, the new, quick-release, formic acid strip shows promise here; some essential oils also show promise). Until such offensive measures bear fruit, a combination of resistant bees (e.g., hygienic bees), chemical treatments, supplemental feeding, isolation (where possible), nosema control, drone larvae removal and regular comb rotation will continue to be the best methods of keeping healthy bees.

**Sue Cobey and Steve Sheppard invested significant resources in battling bureaucracies to allow the importation of this semen and in so doing, they have attained a degree of resistance to these same bureaucracies. No one in the history of our country has ever achieved total immunity from bureaucracies but give credit to Cobey and Sheppard for trying.*

*Joe Traynor is a crop pollination specialist and colony broker in Bakersfield, CA.*

## Snow Cancellation Policy

**In case of snow or ice on the meeting date, listen to WBAL radio before 7:00 PM. If Baltimore County's snow emergency plan is in effect at 6:00 PM, then the meeting is automatically canceled.**

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| | |
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**Be sure to check out CMBA's web site at www.cmbeea.org**

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**Lloyd Snyder – Editor**
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## DATES TO REMEMBER

**General Meeting – January 5, 2010 – at Oregon Ridge Nature Center. 7:30PM. Jeremy Barnes, the president of York County Beekeepers, attended the Apimondia meeting this fall in Montpellier, France, and he will be bringing a DVD he prepared on this subject.**

**Board Meeting – January 18, 2010 – 7 PM at Oregon Ridge Nature Center.**

**Beekeeping Short Course – The 2010 Short Course begins on March 11 this year at 7 PM. The classes will be held in the auditorium of the Oregon Ridge Nature Center. For more information, the complete class schedule and class application form go to www.cmbeea.org.**