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Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

DECEMBER 2007 VOLUME 135 NUMBER 12

FEATURES

Russian honey bees are holding their own with Varroa *mites, and they make honey, too. This Russian queen is from Bob Brachmann's outfit. Find out more on page 23.* (photo by Kim Flottum)

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DEPARTMENTS & COLUMNS

Bees At The Fair

Like many local associations, we create and man a display at the annual agricultural fair, with an observation hive as a focus. As always, it attracted considerable attention.

This year, besides the constant "Are they really disappearing?" query, there were three themes to the inquiries we received.

First, on seeing the model hive on display, a significant number of adults would say, "My grandfather/grandmother had a hive like that." So what happened, two generations ago, to end beekeeping as a populist activity? Was it perhaps the end of sugar rationing after the Second World War and the advent of cheap sweeteners?

Secondly, many people commented that whereas they used to be inundated with bees in the garden, for the last few years they are fortunate to see, literally, two or three bees throughout the year. Instead there has been an increase in bumble bees.

Thirdly, we received a surprising number of queries as to where one might purchase comb honey, suggesting that there is indeed a market for this product.

Jeremy Barnes
York County, PA

Natural Varroa Control

I have been a beekeeper for the last five years or so.

In all of that time I have been trying different control measures for the Varroa mite, until last year.

Quite often when working the hives I will pull a few of the drone brood out to check how many Varroa there are.

Last Spring was no exception, most every drone had several mites.

Then about mid summer the number of mites in the drone cells dropped.

My bee partner, Mark, and I had not treated the hives and did not understand what was happening to the mites.

Mark happened to get some honey on his finger and promptly slurped it up. He noticed that the honey had a very faint mint taste.

We went looking to find where the mint had come from and found that the Highway department had planted Cat Mint in some road dividers near by.

This gave us the idea to plant additional cat mint in our beeyards, which is what we did. The cat mint blooms all summer long and the bees really work it.

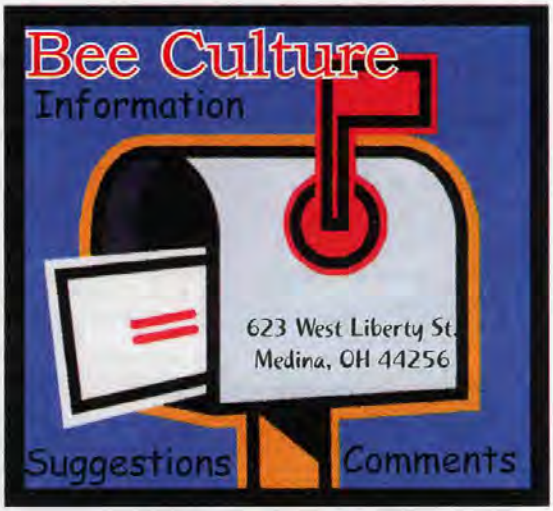
This year when we checked for mites in the drone cells we find about 1 mite in every 10 drone cells. And we find very few drone cells that have more then one mite. This would indicate that the mites are not reproducing, if I understand things correctly.

I would not say that this has been a rigorous scientific endeavor.

We have had other types of mint plants and did not see the same result.

But something has really changed the mite population and I wanted to share our experience in case it might help others.

Brent Smith
Highland, UT



Real Cause Of CCD

I personally have no doubt that CCD is a 'real thing', but I know for certain that the reported incidents are greatly exaggerated. That is to say that the number of hives lost following an observation of lots of brood, a laying queen, and almost no nurse or worker bees is far lower than the numbers being reported. I recently saw one report of 400 hives lost to CCD where the 'evidence' was 'empty hives,' no brood and no queen and without hive moth or SHB damage. Clearly not the symptoms agreed as evidence of CCD.

Nonetheless, I think the differences reported between Canada and the U.S. are significant and in my opinion speak loudly for CCD being stress related. I recently spent some time in Canada. I was surprised to see petrol at $US1 a liter. We are mightily complaining about prices of $US .70 a liter. 43% higher in Canada! What would our pollination industry look like with petrol prices 43% higher? Might it again be economical for farmers to 'keep their own bees', or lease local bees because the long-distance guys can't compete due to petrol prices?

One of the largest pollinators on the East Coast, with 8,000 hives and full-blown CCD, once said at a meeting that his hives *averaged* 20 moves a year and *eight queens each (a year)*. If that is not extreme stress, what is? (This is not beekeeping...but I don't know what else to call it.)

So, the real culprit in CCD is unreasonably low oil prices...AKA, Saudi Arabia and the U.S. political system. Want to bet on whether we will ever see a research paper with such a conclusion?

Lloyd Spear
Guilderland, NY

Science?

You will want to correct one point made both in Jim Fischer's online paper "final dated 9/7/2007" and in your next issue.

I think you will find that Science, Science Magazine, and The Journal which would lead almost anyone to suppose that these are three separate publications of the AASS, are names for a single weekly publication. I think they are a bit schizophrenic about their name and their website does more to add to the confusion than help clarify this issue.

I would not be surprised if Jim has a reprint that says from the Journal blah blah blah and then read online an article that was clearly *Science* Magazine. Anyway, you should correct this as soon as you can convince yourselves that this is the case.

I would like to take credit for pointing this out but my brother who is a biochemist just straight-

ened me out. I spent some time on their website before I became convinced.

Of course AAAS does have other publications and personally, I think that it would be only fair that the AAAS do penance by carrying for at least a full calendar year three of their other truly separate publications under a single name which would also be confusing but would balance out this mess.

Michael Munroe

Small Hive Beetle Trap

There was an article in the June BC on a top trap for hive beetles. I installed one on each of my colonies shortly there after. It appears that these traps will catch at least as many beetles as the bottom trap and are much easier to work with. I have bottom and top traps on my colonies. I find a lot of beetles in some of my colonies and very few or none in others. Most of my colonies are R Weaver All American. I do have some that are local swarms.

I have found the following to be true for my colonies:

A good many bees in some colonies will get into the traps with the 3/16 holes. Some colonies will have a lot of dead bees, trap half full, some a few some none. I'm not sure of the difference. The traps were made at the same time with the same soldering iron.

I have found that cooking oil works just as well as mineral oil. In fact I was running short one day and used some used oil. I could not tell any difference.

Bait. I have noticed that the colonies that fill the traps half full of dead bees had a lot of live beetles in the trap. The dead bees had absorbed all the liquid from the trap and there was nothing to kill the beetles. I'm assuming the beetles are using these dry traps as an escape from the bees. It will be interesting to see how effective the traps are with only oil in them.

Burr comb. Most of my colonies will fill the empty top space with bur comb. I'm not sure how to deter this.

It is my opinion that the top traps are worthy of a try. They do trap beetles, inexpensive and easy to work with.

Leroy Findley
Molino, FL

Raw "Clean" Honey

Larry Connor, in his October 2007 *Sideline Beekeepers* article did our industry a disservice by his jab: "*really raw honey* complete with bee parts and pollen." Five days in my 25-gallon stainless settling tank floats wax, bee parts and air bubbles to the top. Honey drawn from the valve at the bottom is clean until the last few jars, which I later skim and use at home. Shelf life is unimportant. Crystallized jars simply lose their "raw" status when re-liquefied.

"Raw" honey is a specialty/luxury market available to small operators who either sell retail or can personally monitor the condition of their product on the shelves of the retailer. I'm selling "raw, unfiltered" pints for $8.00 to very enthusiastic customers. Why should anyone sneer at that?

John Mills
Nashville, IN

No More Muth Jars

It is interesting to note that the cover of the September edition does not show any of our wonderful golden nectar displayed in a gleaming old-fashioned Muth jar. Could this be due to the fact this historic honey container is no longer being manufactured?

I am a beekeeper aspiring to sell my honey locally at various farmers markets here in Virginia. I am quite proud of my ladies' efforts. I bottled the majority of my small harvest in gleaming four- and eight-ounce Muth jars. The four-ounce bottles were given away as a means to introduce perspective clientele to a wonderful local product. They were so well received that the vast majority asked if they could buy the eight-ounce jars. Often I was told, "The honey is so delicious and the container is highly unique." I would then relay the story of why the bottle was developed to market the new liquid honey made possible by the invention of the honey extractor in the 19th century. Virginians love this type of lore.

Virginia is steeped in history and tradition and this container seems a natural for the people who frequent the many farmers markets here. I offer an incentive of 50 cent price reduction on your next purchase if you return the used bottle for recycling.

I am told the company that manufactures these bottles has eliminated them from future production. If any readers have case lots of the eight-ounce Muth jars they would like to part with, I will gladly purchase all that is offered for my small enterprise.

Joe Miller
Wicked Bottom Bee Products & Livestock Feed
22425 Wicked Bottom Lane
Lignum, VA 22726

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Enjoying Bee Culture

I really enjoyed two articles in the September 2007 issue.

Making Things by Walt Dahlgren. His design is exactly what I was trying to do. Great job!

Getting Ready Southern Style by Jennifer Berry is just what I needed to know. I have been struggling with record keeping. She gave me a good start. Ms. Berry is an outstanding writer. She does a great job covering what I need to know. Thanks!

I live about 60 miles east of Dallas near I-20. I have 12 hives.

Jim Lathem
Wills Point, TX

Congratulations on ABC

My congratulations for the GOLD Medal at the Apimondia in Melbourne!

I'm an author of the leading German beekeeper Journals *ADIZ/biene/Imkerfreund* (www.diebiene.de).

My editor Dr. Juergen Schwenkel and I are planning to present your book to our 35,000 subscribers and beekeepers here in Germany in our December issue. The German beekeepers are looking to the U.S. beekeeping industry with interest!

Gilbert Brockmann
Germany

Dancing Bees

I am having some trouble trying to figure what the "Dancing Bees" are trying to convey to their hive mates.

Let me explain. For years I've been interested in swarming bees and putting out decoy hives to pick up swarms. The more I've done it the more interesting it seems to get. Over the last 50 years I've probably picked up over 200 swarms using bait hives.

It got so interesting that I would video the whole sequence, from the *first* scout to the swarm coming. Sometimes it would take five or seven days, as bees would make a move to come but got disoriented for one reason or another. It was probably the wind. They would have to recluster and start the whole ritual over a again. The longest time it took was 12 days. I know it was the same bees because of the color and also I marked several. The weather was the main problem for the time.

Several times I've been able to video both ends of the act – the empty hive and swarm cluster. And this brings us to the trouble.

These several incidences, were brought about by some one calling the police or fire department about a swarm in the air, and with me knowing *when* the bees are coming or making a move to come, I know they are *my* bees. Before they make a move the scout bees will all go back to the cluster, and leave my decoy standing alone (no bees).

When I get these calls I will take my camera and video the dancing scouts and also look for my marked bees. In several cases I've been able to see all sides of the cluster which brings me back to the trouble.

There will be several bees dancing and most of them will give the same dance, especially the waggle run. Let's say that they were all facing to the left when waggling. Now if I go to the other side these scouts are also facing left. This is what bothers me. If I were pointing to an object to my left and then did an about face I would have to point to my right.

I've read Karl von Frisch's book, *The Dance Language & Orientation of Bees* and only found one reference to opposite side dancers on page 131, "Why were the dances on the opposite side of the comb oriented differently?"

Von Frisch's answer was on page 197: "This occasioned many experiments and much vain head scratching before it became evident, in the Summer of 1947. That location of the hive, direction of flight, and the side of the honey comb are wholly indifferent in themselves. All that matters is in what direction and at what angle the sun stands relative to the bee dancing on the vertical comb surface. That depends not only on the position of the comb surface in space and on the position of the bee in her tail-wagging dance (which differs, for instance, under otherwise identical conditions, on the two sides of the comb). Huh?

I've read and reread this statement over many times and it still makes no sense.

I believe that the dance and waggle does relate distance and direction to other hive mates. But how this dance is interpreted by the hive mates could still be a mystery.

I've also read and reread A. Wenner and P. Wells book *Anatomy Of A Controversy*, and find no reference to this anomaly.

All I know is that the sun does the same thing. The hive is in the same place, the cluster is the same, the only thing changing is the dancing bees on opposite sides of the cluster. Maybe some one can help me with this problem?

Jim Cowan
1010 W. Perry Street
Aberdeen, WA 98520

Needs Help

Beeing the new kid on the block, about to start two new hives next Spring, I am filling up on knowledge from your great and informative magazine. In the October issue Bill Tompkin of Cuyahoga Falls, OH refers to cleaning and dousing everything with Clorox, then rinsing after a few days. Could you give me a more detailed idea of when, why and how much Clorox to use per item. Example – one frame? One hive box?

Also I am thinking of starting a hive in a location where I have a very active Purple Martin house (they eat 2000 mosquitoes a day). Would a hive here become a buffet for my Martins.

Bruce Sabuda
Pinckney, MI

Editor's Note: *A 10% solution (1 part bleach, 10 parts water) is usually recommended, but all wax and propolis must first be removed. Yes. Purple Martins will catch bees, but I don't know if it will become economic. Readers – any thoughts?*

INNER COVER

New Rules

In the last several months I've made time to talk with more beekeepers than I normally would. Not that I don't talk with lots of beekeepers anyway, but I've been doing more of it than normal. And I've spent more of it listening than asking questions. You know all the clichés about listening.... you have two ears and one mouth for a reason you know...and if you don't know, think about it for a minute. You learn more listening than you do talking. So I've been listening.

Most of the folks I've talked to don't have a problem with this mythic curse called Colony Collapse Disorder. Is it real? Is it made up? Is it really something else? Is it really lots of things? Is it an excuse?

But lots of folks are having problems. Not CCD problems. Or at least the problems don't sound like the CCD problems you read about in the journals, newspapers, magazines, hear about on TV and radio, and at beekeeper meetings. Just....problems. Things aren't working the way they should. The way they did last year. Last Summer. Last season. There's just something not quite right. And it's not everything. Just some things. Sometimes. And not the same things every time. It's confusing. Maybe a little scary if you let it be. Of course, there are some who have that mysterious bee killer. The curse of CCD.

And then three things happened in as many days that kind of put it all together for me. Well, kind of anyway. See if this makes some sense.

I was listening to an east coast commercial beekeeper and pollinator tell about what he has seen and heard from beekeepers who he's pretty certain have the classic symptoms of CCD. He told me what they had been doing for the last year or so leading up the time of, during and after entire apiaries collapsed. Seemingly in perfect health one day, and a week later simply disintegrating. And in another three or four weeks....gone. Dead. Empty.

These beekeepers hadn't been doing things much different than he had been doing during the same time. Nor was it much different than what they had been doing last month, last season, last year. The things they did, the *Varroa* treatments they used, the food they fed, the number of times they moved, the type of syrup they poured on, where they went, what they did, how they did it. But something was different. The bees just weren't the same. They didn't act the same. They didn't respond the same. They didn't do the same. They didn't look, smell, sound or feel the same. Different. But...what was different? Couldn't tell. Just not the same.

And, to add mystery to misery, when you did the things you used to do to get the bees to do the things they used to do, they didn't do them. Or do them as fast. Or the same way. Or did too much of the same thing which always turned out bad. Or they did things on their own with out you. It was just too weird.

It was, said this beekeeper, as if someone had changed the rules. Had changed them completely and hadn't bothered to tell anyone. Maybe they told the bees but they sure hadn't told the beekeepers. Or the scientists or the regulators. And when he said it out loud it suddenly seemed to make sense. Some silent hand came down from the heavens and tweaked the vertical button and the picture cleared up. The rules seem to have changed. What we did doesn't work or work as well anyway. Or actually does more harm than good.

OK. Now what? And that's where it stayed that day.

The next day the November issue of *The American Bee Journal* came in the mail. I don't know about you but I pretty much read that whole magazine from cover to cover the day it arrives. In fact, I'll bet that nobody but Joe Graham reads that magazine more carefully than I do. Probably for different reasons but I do read it every month.

Anyway, I came to an article by Kirk Webster. It was the last in his series on how he manages his colonies during a season. Kirk is one of those beekeepers we talked about here awhile ago...he's a charter member in the Brotherhood of Better Beekeepers...he bit the bullet some time ago and decided that keeping bees without chemicals was a better way to go. That working with the bees instead of against them was a better philosophy. It cost for awhile, but he's on the way up now and he's better for it. He raises queens. Get some if you can.

His article finished his New England season - cleaning up, getting ready for winter, doing wax...fall stuff. But then he changed gears. He said that... "beekeeping had the dubious honor of becoming the first part of our system of industrial agriculture to actually fall apart...We blame the weather, the mites, the markets, new diseases, consumers, the Chinese,

Continued on page 61

DECEMBER – REGIONAL HONEY PRICE REPORT

A year makes a little bit of difference overall …, but for some products in some regions, it's a real big change. Posted here are the December 2006, and the December 2007 prices for all products in all regions. Take a look at yours.

REPORTING REGIONS - 2006

	1	2	3	4	5	6	7	8	9	10	11	12	SUMMARY Range	SUMMARY Avg.	History Last Month	History Dec. 2005
EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS																
55 Gal. Drum, Light	1.00	1.01	1.06	1.18	1.05	1.13	1.04	1.06	0.99	1.00	1.25	1.13	0.99-1.25	1.07	1.03	0.89
55 Gal. Drum, Ambr	0.99	1.00	0.99	1.15	0.82	0.95	0.91	1.10	0.85	0.90	1.20	1.00	0.82-1.20	0.99	1.02	0.81
60# Light (retail)	108.00	114.25	120.00	96.00	105.00	100.00	97.50	105.00	119.00	120.29	97.50	126.50	96.00-126.50	109.09	110.42	103.83
60# Amber (retail)	108.00	107.75	120.00	96.50	105.00	92.00	93.88	101.67	109.00	120.16	96.75	125.80	92.00-125.80	106.37	109.61	100.02
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS																
1/2# 24/case	44.64	50.49	40.80	39.94	48.61	46.25	40.08	48.61	48.61	35.76	35.50	72.00	35.50-72.00	45.94	43.70	44.05
1# 24/case	61.44	67.72	62.40	58.22	63.00	54.33	61.55	60.90	47.85	77.76	90.00	83.40	47.85-90.00	65.71	68.90	62.43
2# 12/case	61.68	58.34	60.60	55.06	58.50	52.00	55.40	66.00	45.20	57.84	48.65	71.05	45.20-71.05	57.53	57.25	55.61
12.oz. Plas. 24/cs	57.12	57.92	46.75	55.17	54.00	49.33	48.93	51.60	47.09	47.64	65.00	62.00	46.75-65.00	53.55	54.53	51.94
5# 6/case	65.52	65.63	70.50	57.70	67.29	66.67	60.84	50.00	55.80	56.43	60.00	81.15	50.00-81.15	63.13	65.37	61.09
Quarts 12/case	96.72	119.00	96.72	80.24	78.00	71.50	82.68	73.67	84.00	110.88	87.48	118.00	71.50-119.00	91.57	90.33	82.86
Pints 12/case	56.39	60.98	56.39	51.34	58.00	48.00	44.88	45.00	54.00	49.50	48.00	57.75	44.88-60.98	52.52	52.58	51.76
RETAIL SHELF PRICES																
1/2#	2.75	2.57	2.19	2.63	1.85	2.50	2.50	1.89	2.44	2.38	2.59	3.99	1.85-3.99	2.52	2.60	2.51
12 oz. Plastic	3.00	3.34	2.53	3.29	3.70	3.25	2.89	3.76	3.12	2.99	2.99	3.15	2.53-3.76	3.17	3.36	3.26
1# Glass/Plastic	3.88	4.08	3.39	4.08	3.93	3.90	3.61	4.09	3.95	3.92	3.92	5.04	3.39-5.04	3.98	4.02	3.94
2# Glass/Plastic	7.33	6.42	6.59	5.80	6.54	6.02	6.13	8.50	6.48	6.38	6.19	9.42	5.80-9.42	6.82	6.71	6.62
Pint	6.54	7.58	6.54	5.57	5.76	5.41	5.21	6.25	5.00	6.45	5.64	7.53	5.00-7.58	6.12	5.89	6.08
Quart	9.77	10.98	9.77	8.89	8.13	8.12	8.94	9.31	8.50	13.46	8.20	9.66	8.12-13.46	9.48	9.34	9.06
5# Glass/Plastic	15.17	14.38	15.29	13.54	15.00	13.25	13.50	15.99	13.85	13.80	12.60	18.55	12.60-18.55	14.58	14.91	14.61
1# Cream	4.50	5.03	4.89	4.35	5.71	3.75	5.44	4.96	5.71	5.00	4.51	5.00	3.75-5.71	4.90	5.05	4.89
1# Cut Comb	5.00	5.15	5.19	5.15	7.09	4.20	5.28	4.66	7.09	5.50	3.75	9.97	3.75-9.97	5.67	5.28	5.75
Ross Round	5.73	3.98	5.19	5.09	5.73	2.50	5.63	6.00	5.73	6.00	6.50	6.00	2.50-6.50	5.34	4.50	5.31
Wholesale Wax (Lt)	2.25	2.27	2.00	2.76	1.70	2.19	2.53	2.00	2.50	3.00	2.48	2.25	1.70-3.00	2.33	2.62	2.19
Wholesale Wax (Dk)	2.18	2.13	1.00	2.19	1.50	4.19	2.02	1.75	2.00	2.55	1.82	1.50	1.00-4.19	2.07	2.19	1.68
Pollination Fee/Col.	60.00	68.25	60.00	38.00	41.00	58.00	45.33	60.00	35.00	77.31	25.00	50.00	25.00-77.31	51.49	53.94	52.56

REPORTING REGIONS - 2007

	1	2	3	4	5	6	7	8	9	10	11	12	SUMMARY Range	SUMMARY Avg.	History Last Month	History Last Year
EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS																
55 Gal. Drum, Light	1.10	1.35	1.26	1.38	0.88	1.20	1.15	1.10	1.26	1.08	1.09	1.16	0.88-1.38	1.17	1.14	1.07
55 Gal. Drum, Ambr	1.00	1.21	0.92	1.13	0.79	1.02	1.13	1.00	1.00	1.00	0.99	0.97	0.79-1.21	1.01	0.99	0.99
60# Light (retail)	110.00	115.50	120.00	110.60	110.00	110.00	114.00	107.15	110.00	121.33	123.40	120.00	107.15-123.40	114.33	109.91	109.09
60# Amber (retail)	110.00	105.00	105.00	105.00	110.00	107.33	111.20	110.00	110.00	119.59	122.80	119.50	105.00-122.80	111.29	107.42	106.37
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS																
1/2# 24/case	47.52	48.98	40.80	42.53	60.95	38.50	42.27	60.95	60.95	46.90	36.40	60.50	36.40-60.95	48.94	52.89	45.94
1# 24/case	65.33	71.28	67.20	60.53	60.00	66.93	71.11	68.80	55.00	77.76	67.45	80.00	55.00-80.00	67.62	70.24	65.71
2# 12/case	64.08	61.08	61.80	55.20	54.00	52.40	61.37	68.00	58.00	57.84	52.80	76.80	52.40-76.80	60.28	61.81	57.53
12.oz. Plas. 24/cs	58.56	61.68	49.80	49.45	48.00	56.00	58.98	56.80	48.50	47.28	50.80	55.00	47.28-61.68	53.40	53.88	53.55
5# 6/case	75.75	65.98	71.25	62.80	68.99	63.50	68.00	74.40	62.50	61.86	60.00	74.50	60.00-75.75	67.46	66.15	63.13
Quarts 12/case	110.59	135.75	112.20	83.29	79.25	78.19	84.72	83.40	102.00	120.12	80.65	130.00	78.19-135.75	100.01	91.80	91.57
Pints 12/case	68.75	69.98	66.00	46.50	58.00	56.00	67.51	49.50	66.00	64.68	59.13	67.00	46.50-69.98	61.59	57.77	52.52
RETAIL SHELF PRICES																
1/2#	3.00	2.68	2.40	2.74	2.19	2.50	2.72	2.35	2.54	2.54	2.79	3.75	2.19-3.75	2.68	2.66	2.52
12 oz. Plastic	3.88	3.57	3.25	3.18	3.25	3.40	3.39	3.77	3.43	3.15	3.39	3.95	3.15-3.95	3.47	3.38	3.17
1# Glass/Plastic	4.73	4.32	4.10	4.21	3.92	4.70	4.14	4.63	3.73	4.46	3.98	5.16	3.73-5.16	4.34	4.28	3.98
2# Glass/Plastic	7.50	7.44	7.05	6.88	6.62	6.39	6.66	8.16	7.31	6.38	6.12	9.25	6.12-9.25	7.15	7.02	6.82
Pint	7.68	7.92	6.50	5.35	4.75	5.53	6.33	5.85	5.58	8.00	5.36	8.15	4.75-8.15	6.42	6.12	6.12
Quart	12.00	11.98	8.73	9.37	7.70	9.41	8.27	10.00	10.00	11.00	9.03	13.50	7.70-13.50	10.08	10.95	9.48
5# Glass/Plastic	15.75	16.16	15.65	14.00	22.13	15.50	17.40	17.00	15.00	12.74	13.94	18.00	12.74-22.13	16.11	16.00	14.58
1# Cream	5.99	5.91	4.87	4.86	5.99	3.80	5.49	4.95	5.99	5.48	4.72	5.75	3.80-5.99	5.31	5.43	4.90
1# Cut Comb	5.00	6.72	5.19	5.06	7.42	4.77	7.31	5.00	7.42	8.00	9.00	7.50	4.77-9.00	6.53	6.09	5.67
Ross Round	6.75	3.97	4.97	5.75	6.75	3.50	6.75	5.00	6.75	6.75	5.75	6.25	3.50-6.75	5.75	5.56	5.34
Wholesale Wax (Lt)	2.00	3.12	1.80	2.03	2.15	3.00	3.30	2.63	2.93	3.00	2.59	3.31	1.80-3.31	2.65	2.37	2.33
Wholesale Wax (Dk)	2.00	2.73	1.70	1.87	1.90	2.00	2.85	2.75	2.00	2.68	2.25	2.00	1.70-2.85	2.23	2.19	2.07
Pollination Fee/Col.	60.00	82.33	52.50	30.00	90.00	47.00	46.67	60.00	94.03	94.03	75.00	108.75	30.00-108.75	70.03	63.57	51.49

RESEARCH REVIEWED

The Latest In Honey Bee Research

Steve Sheppard

"Are we perhaps doing more damage to a colony of bees by making them pull an "all-nighter" on the road than by moving them in the heat of day with proper ventilation?"

A good night's sleep is generally held in high esteem to achieve peak performance in athletic or mental tasks in humans. As final examinations loom on the horizon for students near the end of an academic semester, the benefits of pulling an "all-nighter" study session must be weighed against the possibility of being drowsy and slow-witted when exam questions are actually passed out. Although there are distinct limitations in comparing behaviors that we appear to share with the honey bee, it would be unlikely for most of us to think of the industrious honey bee needing to hit the snooze button on an alarm clock to "catch a few more winks." However, work by a group of German researchers demonstrated that honey bees do need their sleep and, furthermore, they make up for the forced lack of it by taking extra rest periods the next evening (Sauer et al 2004).

The researchers introduce the subject by informing us that the "...biological significance of sleep is still largely unknown." However, a basic principle is that, during sleep, various physiological processes take place in organisms that are important to performance and survival. Because of this fundamental benefit to physiological processes, the authors suggest that sleep originated early in the evolutionary process, "long before the development of birds and mammals." As such, the study of sleep in cockroaches and honey bees could help scientists uncover general principals that would lead to a deeper understanding of sleep and its role in humans.

Previous research showed that honey bees undergo a process during the night that is similar to sleep in mammals. These studies relied on sophisticated measures of nerve and muscle electrical activity and behavior. Two behavioral signs associated with the sleep period of honey bees are when "the amount of antennal immobility" and "the duration of episodes of antennal immobility" reach their maxima. In mammals, a lack of sleep (sleep deprivation) leads to compensatory changes that help the organism "recover" from the lost sleep, supporting the idea that regulatory processes are involved. We are all aware of this phenomenon from experiential learning about our own sleep needs. Thus, when we stay awake throughout a normal sleep period (like the student pulling the "all-nighter" study session), most people would not be surprised to find that they craved more sleep during the next day or night to "compensate" for the lost slumber. Sauer and colleagues set up experiments to determine whether the same process of compensation occurred in honey bees.

The researchers worked with individual honey bees maintained in specially prepared cages under different light regimes, both with and without "sleep deprivation." Sleep deprived bees were maintaining in glass tubes inside cages that were on an eccentric plane that moved, thus causing them to have to "stay awake" to deal with the rolling motion of the glass tube on the tilting device. Non-sleep deprived bees were maintained in the same apparatus, but the tilting device was turned off. Two light regimes were used, with alternating light: dark periods. Regime 1 followed a cycle of dark (12 hours): light (12 hours): dark (12 hours) and regime 2 was light (12 hours): dark (17 hours). In the first regime – sleep deprivation was applied to experimental bees in the first dark period (when bees normally undergo sleep), while control bees were allowed to sleep normally. Behavioral observations for sleep ("amount of antennal immobility" and "duration of episodes of antennal immobility") were then made during the following light (12 hour) and dark (12 hour) periods. Under the second regime, sleep deprivation took place for 11 hours of the initial 12 hour light phase and behavioral observations for sleep were made during the single following dark phase (17 hours). Behavioral observations and categorization were made using a special video set-up and software that allowed measurement of antennal movement and head position.

The researchers found that sleep deprivation of bees during the 12 hour dark period resulted in significant differences between sleep-deprived and control bees (light regime 1). Interestingly, the difference did not become apparent during the light period (12 hour) that immediately followed the dark period of sleep deprivation. Instead it occurred during the next "un-

disturbed" dark period. When bees were sleep-deprived during the light period (light regime 2), no significant differences between the two groups of bees were observed in the subsequent dark period. The difference found between the experimental groups was due to "the occurrence of longer episodes of antennal immobility," which had previously been shown to reflect "sleep" in honey bees. The authors point out that their research demonstrated the role of sleep deprivation, rather than "stress," on the honey bees, because experimental bees that were disturbed during the light period (light regime 2) did not show differences in sleep during the subsequent dark period compared to control bees.

The authors conclude that honey bees compensate for a lack of sleep (sleep deprivation) by an "intensification" of the sleep process (during the next dark period) and thus, as with humans and other mammals, regulatory mechanisms are certainly involved. The authors go on to note that "the function of sleep in honey bees is therefore...more than only energy conservation." The main areas of discussion in this paper covered aspects of sleep and its regulation that are apparently shared among honey bees, other arthropods, humans and other mammals. However, if we consider for a moment only the importance of sleep to honey bees and how beekeeping management practices might impinge on the topic, we can look at these results from another angle. What about that example of the student and the all-night study session? How many migratory beekeeping operations load up their bees and attempt to drive as much as possible at night, to avoid traffic and heat stress on the bees? Are we perhaps doing more damage to a colony of bees by making them pull an "all-nighter" on the road than by moving them in the heat of day with proper ventilation? Does sleep deprivation lead to compromises in brood care or immune response at the colony level? There are a number of questions that could be asked relative to this topic, but common to these is the need to better understand the effect of honey bee sleep deprivation and compensatory mechanisms at the colony level. BC

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Sauer, S., E. Herrmann and W. Kaiser. 2004. *Sleep deprivation in honey bees.* J. Sleep Res. 13: 145-152.

Monitoring Nosema

Early detection and accurate spore counts are necessary.

Richard Rogers & Geoffrey Williams

Introduction

Biology

Nosema disease in the western honey bee, *Apis mellifera*, is caused by the microsporidians *Nosema apis* and *Nosema ceranae*. These single-celled parasites infect adult bees when spores are ingested. *Nosema* replicates in epithelial cells lining the midgut; newly produced spores spread to neighboring cells or into the gut when infected cells burst. These spores are eventually released into the environment with feces, and remain infective for several months.

Dysentery (diarrhea) in honey bees is often associated with *Nosema* infection because it aids in transmitting the parasite, however, *Nosema* is seldom the primary cause of dysentery. Infected worker bees tend to have a reduced lifespan and lack the ability to produce larval food, culminating in a reduced worker population that may result in reduced colony vigor or even collapse.

Distribution & differences

Until the last decade, *Nosema apis* was probably the only species of *Nosema* infecting the western honey bee. It was mainly a problem in temperate climates characterized by cool, lengthy Springs. Infections are most severe in late Winter and early Spring as brood rearing starts and flight possibilities are limited.

Recent evidence suggests that within the last decade, a second *Nosema* parasite, *Nosema ceranae*, has jumped from the eastern honey bee, *Apis cerana*, to the western bee. First discovered in western honey bees in Taiwan and Spain, *Nosema ceranae* is now thought to be distributed globally. Because of this recent host jump, there are gaps in scientific knowledge about how it will affect the western honey bee. Recent evidence suggests that it may be more virulent and infections may lack seasonality.

Model of bee abdomen showing midgut.

Diagnosis

Beekeepers are all too familiar with the symptoms and consequences of *Nosema* disease, and often diagnose a colony by the presence of dysentery in the Spring. Unfortunately, a Spring diagnosis is too late to prevent the dwindling and loss of bees that is associated with infection. With *Nosema ceranae* being implicated in more severe infections, *Nosema* monitoring programs are urgently needed so beekeepers and apiary inspectors can be adequately forewarned of increasing infections and can take actions to mitigate the consequences.

Few beekeepers feel they have the tools, skills, or time, to monitor *Nosema* disease using accurate and quantitative methods. The simple method of removing and examining the digestive tract of a honey bee in-the-field is a quick way to confirm heavy infections in a few bees, but it is not suitable for monitoring the development of infections.

The following is a set of step-by-step instructions for a laboratory-based method for monitoring *Nosema* spores with much more precision and reliability. It is based on experience and methods incorporated from numerous published sources. Hopefully this information will help improve *Nosema* monitoring and detection programs for beekeepers and apiary inspectors.

Lab Materials

- 70% ethanol
- Alcohol lamp and 95% ethanol as fuel, or a small butane torch
- Mortar & pestle
- 10 ml syringe and/or small graduated cylinder
- Hemacytometer & cover slips
- Compound microscope capable of 400x
- 10 ml vials (or larger if sample warrants)
- 0.01 ml loop
- Small funnel
- Distilled water
- Vinyl or latex gloves
- Forceps (soft & pointed)
- Scalpel or razor blades
- Plastic tray
- Lens paper
- Kimwipes™ or other lint-free tissue

Dysentery.

Nosema prep.

Nosema prep – mortar and crushed bees

- Paper towel
- Lint free cloth
- Labels
- Fine tip permanent marker

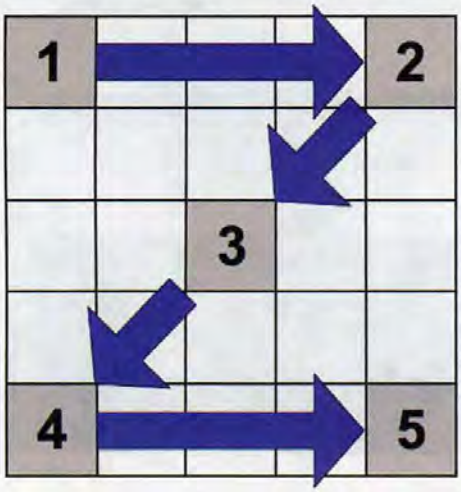
Methods

The following technique is based on processing 10 bee abdomens per sample for each spore count. This sample size is easy to work with and less messy than a large sample of bees. However, it is perfectly acceptable, and even recommended by some, to use a larger number of bees (e.g. 15, 20, 30, 60). The most important thing to remember is to use 1 ml of distilled water per bee in the sample. If this is done, the formula for calculating the number of spores per bee (provided further on in this article) is valid regardless of the number of bees used. As an alternative to a larger sample of bees, increase the number of 10 bee samples per colony or apiary and this will highlight any variability that may exist.

Collect sample of bees

1. Collect 20-50 live bees from the hive entrance or from the top bars above cluster. The important thing is to be consistent because there can be variability in *Nosema* infection in bees from different parts of the hive. A modified portable vacuum works great for this job, but be sure to clean the nozzle and collection container between hives to avoid cross contamination of samples.

TIP: A single sample of 200-300 bees collected from the face of a brood comb will provide enough bees to determine *Nosema* spores per bee, percent infection with tracheal mite (slicing method), and number of *Varroa* mites per 100 bees (alcohol wash method).



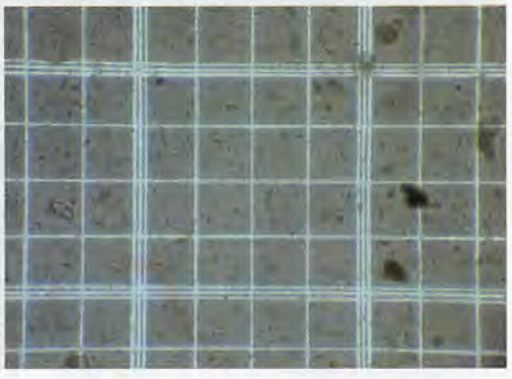
Grid counting pattern.

2. Put bees in a resealable plastic bag or specimen jar, clearly labeling each sample. Include location (such as apiary name), hive number, date, and name of the collector. Get the sample to a freezer as soon as possible and keep frozen until ready to process.
3. If samples need to be shipped to a laboratory, put the frozen samples in an insulated container with an ice-pack and ship prepaid by overnight courier. Include a log of all samples and your contact information.
4. It is usually good practice to notify the lab prior to shipping. Also, ship early in the week to avoid delays caused by weekends and holidays.

Preparation of sample

Wearing vinyl or latex gloves, prepare a *Nosema* spore suspension from a bee sample as follows.

1. Rinse mortar, pestle, and tray with 70% ethanol (EtOH). Dab dry with lint-free tissue.
2. Dip forceps in 70% EtOH and then flame with alcohol lamp or torch.
3. Take 10 bees from a sample bag and place on the tray.
4. With pointed forceps and a razor blade, slice off bee abdomens and place them in the mortar; dispose of bee head and thorax.
5. Draw 10 ml of distilled water (dH_2O) into the syringe (BE AWARE: If more than 10 bees in sample, increase the amount of distilled water accordingly).
6. Dispense a small amount (1-2 ml) of dH_20 in the mortar with the abdomens.
7. Carefully crush abdomens with the pestle and grind well.
8. After grinding, add another 3-5 ml dH_2O by rinsing it down the sides of the mortar to consolidate the bee material into a spore suspension.
9. Remove large debris (bee bits) with forceps and put in container for later disposal.
10. Using a small funnel, pour contents of the mortar



Grid with triple lines.

into a 10 ml vial (or larger if more than 10 bees in sample), and use the remaining dH_2O in the syringe to do a final rinse of the mortar into the vial.
11. Label the vial with a sample number and record details on a sample log sheet.
12. Rinse gloves and dry with lint-free cloth.
13. Repeat procedure for each sample.

Technique for microscopic examination

Wearing vinyl or latex gloves, examine a minute quantity of spore suspension under a microscope and count the spores as follows.

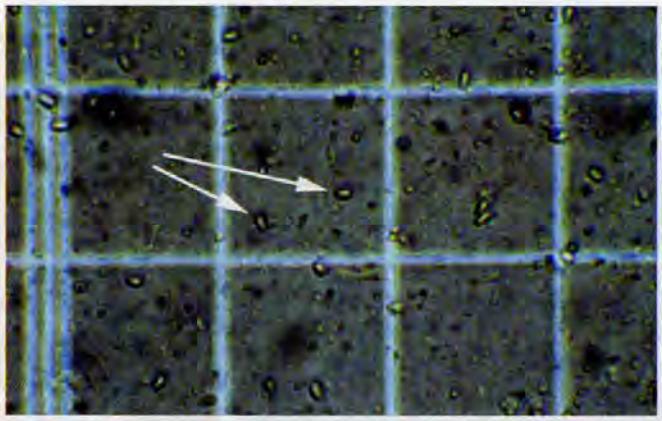
1. Rinse the hemacytometer and cover slip in 70% EtOH and wipe dry with lint-free tissue.
2. If necessary, clean the hemacytometer and cover slip again with lens paper to ensure they are dust-free.
3. Place cover slip on hemacytometer.
4. Shake the vial containing the sample up and down 15 times to ensure even distribution of the spores in the spore suspension.
5. Sterilize a 0.01 ml loop using a flame.
6. Dip the loop end into the spore suspension in the vial, and then carefully remove the loop without touching the sides of the vial.
7. Touch the loaded loop to the edge of cover slip on the hemacytometer. The spore suspension in the loop should flow smoothly by capillary action under the cover slip to cover the grid of the hemacytometer.
8. Let the sample on the hemacytometer sit for a few minutes.
9. Place the hemacytometer on the compound microscope stage, and then focus in on the grid area using a 10X objective. Once the grid area is centered, switch to a 40X objective for counting spores.
10. The pattern for counting and moving the viewing field should be consistent from sample-to-sample (see figure pattern).
11. Count all spores in each of five blocks surrounded by triple lines (the four corner blocks and the middle block; each with 16 squares), only counting spores that are touching the top and left triple lines. DO NOT count spores touching the bottom and right triple lines.
12. Use the following formula to calculate the number of spores per bee.

Average number of spores per bee = ((block 1 spore count +...+ block five spore count) / 80) X (4×10^6)

Interpretation of Results

Spore loads per bee can be highly variable, and there is no established threshold for when to initiate treatment. For *Nosema apis* infections, average spore counts per bee are normally lowest in September and October. Counts higher than one million spores per bee in the Fall months may result in reduced ability of the colony to survive the Winter. *Nosema apis* spores are normally most abundant in the Spring months, with counts higher than 12 million spores per bee not uncommon. The magnitude of the counts is probably more important than the exact numbers. For example, counts that are a few million spores per bee apart are likely more significant than counts a few thousand, or even tens of thousands, apart.

It is difficult to visually distinguish *Nosema apis* spores from those of *Nosema ceranae* (genetic methods are the most reliable for accurate species identification). This is unfortunate because *Nosema ceranae* is an emerging parasite and the consequences of infection are not yet fully investigated. Spore counts of up to 40 million spores per bee, possibly related to *Nosema ceranae* infection, have been documented. Also, infections are being detected in months that are atypical. Knowing the species involved in an infection would be helpful for determining effective management options.



Spores.

Nosema disease is a disorder that must not be overlooked. It is important to monitor spores at least three times per year (Spring, mid-Summer, Fall) to establish infection trends, provide early warning of potential disaster, and provide feedback on the efficacy of management strategies (another topic for another day). BC

Richard Rogers is CEO of Wildwood Labs in Kentville, NS, Canada. Geoffrey Williams is at Acadia University, Wolfville, NS Canada.

Useful Links

Diagnosis of Honey Bee Diseases
http://www.ars.usda.gov/is/np/honeybeediseases/honeybeediseasesintro.htm

Nosema: Effects from *Nosema apis* on *Apis mellifera*
http://www.algonet.se/~beeman/research/nosema.htm

Nosema presentations by Paxton and Fries
www.dipucordoba.es/medioambiente/pdf/XJornadasApiPonencia01.pdf

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Cold Country Queens

Using Russian bees means a different way to keep bees, but the new rules are better.

Kim Flottum

The best way we know to lick *Varroa* isn't a new chemical, isn't an old chemical used a new way, isn't an illegal chemical or a legal chemical used illegally. The best way isn't a mechanical method – removing drone comb, or screened bottom boards either. It's not powdered sugar, electric foundation, garlic powder or magic. No, the best way to beat *Varroa* is to raise bees that resist the attacks of this devil mite, or to tolerate, without harm, their presence in a hive.

Even if that tolerance, or resistance isn't 100%, reducing the need to treat a colony with any chemical, or using any mechanical method is only money in a beekeeper's pocket. Paying for treatments and the labor to apply them has become the number one expense for many commercial beekeepers, and certainly has added to the spend column on all of our spreadsheets.

So when we hear about bees that are showing this admirable trait, we take notice. Moreover, we want you to take notice because a potentially resistant bee means money in your pocket, and, more importantly, bees in your boxes.

That's why we continue to be interested in Russian bees. Russians are not a race, or a breed, but a mix of several strains brought to the U.S. from eastern Russia several years ago by the Baton Rouge USDA Bee Lab. Since then several lines have been released, crossed, eliminated and used. Today, Russian bees can be bought that are Russian/something-else hybrids. They tend to be unpredictable. However pure Russian – that is, Russian x Russian – production queens are also available.

Getting pure Russians has been time consuming, and less than perfect, but some Russian queen producers have been quite successful because of isolation, and stocking local beekeepers with their stock so when virgins fly, they meet with only drones their queens have produced, or drones from queens they shared with other beekeepers. This is about one of those Queen Producers.

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Bob examines a late season frame of queen cells.

Bob Brachmann moved to southwestern New York in 1993 after working for commercial queen and package producers in California for several years. He liked the area.

Tracheal mites were a problem early on in his operation, as were *Varroa* mites. But treating with hard chemicals went against the grain. Selective breeding worked quickly for Tracheal mite resistance, but large losses each year from *Varroa* was hard on the business plan.

So, in 2000 Bob switched to using Russian breeder stock from the Baton Rouge lab. This was a fundamental change in beekeeping practice, and this change is the most difficult part of moving from the bees our fathers kept to a new and productive line that is resistant to both Tracheal mites and *Varroa*, yet still makes honey and is easy to work.

Russian bees operate under a different set of rules, and if a beekeeper is willing to change the switch will work. If, on the other hand, you try to keep these new bees by the old set of rules, the switch will most certainly fail.

The first thing Bob did was begin flooding his area with pure Russian

A screened divider separates the two, three and four sectioned supers.

An eight-ounce Really Raw Honey container. Bob and his crew filled and labeled over 30,000 of these this Fall.

drones, so his pure Russian virgin queens would mate with only Russians. Russian hybrids, that is Russians x Italians or Carniolans – have been spectacularly poor performers and given the generic term 'Russian,' a bad name. And that's too bad.

Now, after seven years of selection and breeding by USDA and other cooperators he has a reliable line that meets his specifications of hygienic behavior, gentleness, Spring buildup, production, wintering ability and mite resistance. And they're pure.

It's mite resistance that is the primary goal with raising these bees, so that mite treatments can be reduced or even eliminated. The biggest problem with mites and Russian bees comes when Russian colonies are in the same yards as non-Russian bees. They will become fantastically infested with *Varroa*. This pressure, then, is still more than even the best Russians can handle and a once-a-year, or once-every-other-year soft treatment is required. Bob uses an organic acid treatment with good results when a colony of Russians becomes infested.

But, in an all Russian apiary, the possibility of not having to treat even once a year is probable. This has helped the bottom line for beekeepers using these bees, and definitely reduced, or eliminated the need to use hard chemicals.

An added benefit is that Russians Winter on far, far less honey than traditional lines, thus more honey can be removed at harvest. This, too helps the bottom line.

But there are differences, and to successfully manage Russians beekeepers must make some management changes. Foremost is that they are extremely resource oriented, thus are slow to build in the Spring. But, when both nectar *and* pollen are available they grow explosively, so supering early, and more than normal is the rule, not the exception. If that rapid buildup starts before you do, swarming is a likely occurrence. So make supering early and generous.

Typical mating yard.

Small populations, when compared to Italians are also the rule, but rapid buildup to take advantage of Summer or Fall flow's should be anticipated. These aren't the bees of old, but they work.

Bob produces about 1000 pure Russian queens a year for sale through his business Cold Country Queens. He also prepares about 100-150 four-frame nucs to sell headed by his queens. Plus he raises more nucs for his own use. He continues to bring pure Russian stock into his system that he gets from Charlie Harper, who works with the USDA. Charlie is a Russian breeder who sells only breeder queens. So Bob's stock is being constantly upgraded and improved by improvement from the USDA and cooperating Russian breeders, but with only Russian blood.

This next season Bob will be actively engaged in the Russian Bee Program that is just taking off. This means he will be maintaining two lines of Russians, plus using drones from an additional 12 lines.

To make all of this happen he runs about 700 queen mating nucs in three-way mediums, four-way shallows, about 100 Styrofoam mating nucs and about 400 two-way eight-frame deeps. The three- and four-ways can go to nuc mothers or full colonies during the latter part of the season.

The Honey House. Supers in back came in through the door on the left. Two extractors, left and center, and wax spinner right, with cappings melter in foreground. Sump bottom left. Bottling tank just to the left of sump, out of picture.

All yards are protected with solar electric fences. Bear are a problem, but solar unit theft is an even bigger problem.

Styrofoam mating nuc and frame.

He uses typical queenless cell builders, adding brood every eight days to the colony that holds a maximum of 45 queen cells.

This past year was particularly productive for a honey crop, considering his location and the weather. The Fall flow is the main flow in southwest New York, and this season he produced nearly 25,000 pounds of honey. About 17,000 of those go to Really Raw Honey in eight ounce jars, but the rest he retails directly. He has a crew of three who extract, bottle and label, and his son Trevor helps part time.

Bob Brachmann, of Cold Country Queens.

The portable honey sales booth.

The honey part of this business is straight forward and well organized.

Supers to extract are brought into the honey house, which is part of a large garage. Uncapping is done with a Gunness machine, wax is captured in a Maxant spinner and then put in a melt box, and frames go into either a Dadant or Hubbard 60-frame extractor.

The extractors and wax sinners drain into a sump, then honey is pumped to a raised bottling tank. No heat is applied anywhere in the system, and the Really Raw product isn't filtered. The retail honey produced is, however.

Retail sales are all local and a roadside stand has come onto the scene also.

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Cold Country Queens has found another way to raise bees without constantly being on the chemical treadmill. It took a lot of sacrifice early on, and it meant learning to keep bees with a new set of rules. And it's working. BC

BEEYARDS

Larry Connor

Learn to evaluate a beeyard location before you move.

As important as it is to apiary management, the geographical positioning of beeyards is a frequently overlooked part of a beekeeper's operation, especially in the case of hobby and sideline beekeepers. If you are keeping fewer than 100 colonies of bees, chances are the locations you use to keep these bees resulted from a combination of fate, necessity and maybe some dumb luck. I suspect many beekeepers would keep all of their colonies around the house if it were not for the influences of family, neighbors, and local laws prohibiting such a behavior. Of course, I'd hope that any beekeeper worth his or her salt would realize that there are very good reasons why colonies should be spread out to maximize honey production.

Here are some reasons why you may not want to keep bees in a certain location, at least not all year. On the other hand, these may work out just fine:

1. Your best friend's brother wants bees there so he can look at them when he visits from the big city because it reminds him of when Dad kept bees there in the 1950s. If the area has grown up over the years and there are many houses and little forage in the area, you may need to find an excuse to NOT put bees there. Or maybe put some old boxes out that contain no bees at all, saying you are attempting to trap bees in the hives.

I actually have this request, and the location is pretty good, right on the edge of a corn/bean field (depending on the contract farmer's rotation). There are several reasons why this could work out very well. First, the bees would be over one-eighth mile from a busy county road and hidden by mature trees, even in Winter. The field takes up the large part of 20 acres, and is open and sunny. Second, the colonies will be visible from the house and garage, so any disturbances would be easily noticed. Third, there is a solid gravel road out to the field, and packed earth from heavy farm equipment along the edge. Fourth, the brothers are happy to ask the contract farmer to plant a legume mix to my specification (I'd combine several clovers and alfalfa) with the understanding that the hay would be cut *after* the bees had filled a super or more of honey. Fifth, there are few children, bikers, snowmobilers or hunters that visit the area so both the liability and risk of damage to hives are low. Sixth, the location is close to the rest of the bees I might put in the area, so it will be efficient to move from yard to yard. Finally, there is a constant supply of coffee and lemonade at my best friend's house, and who wants to work that hard?

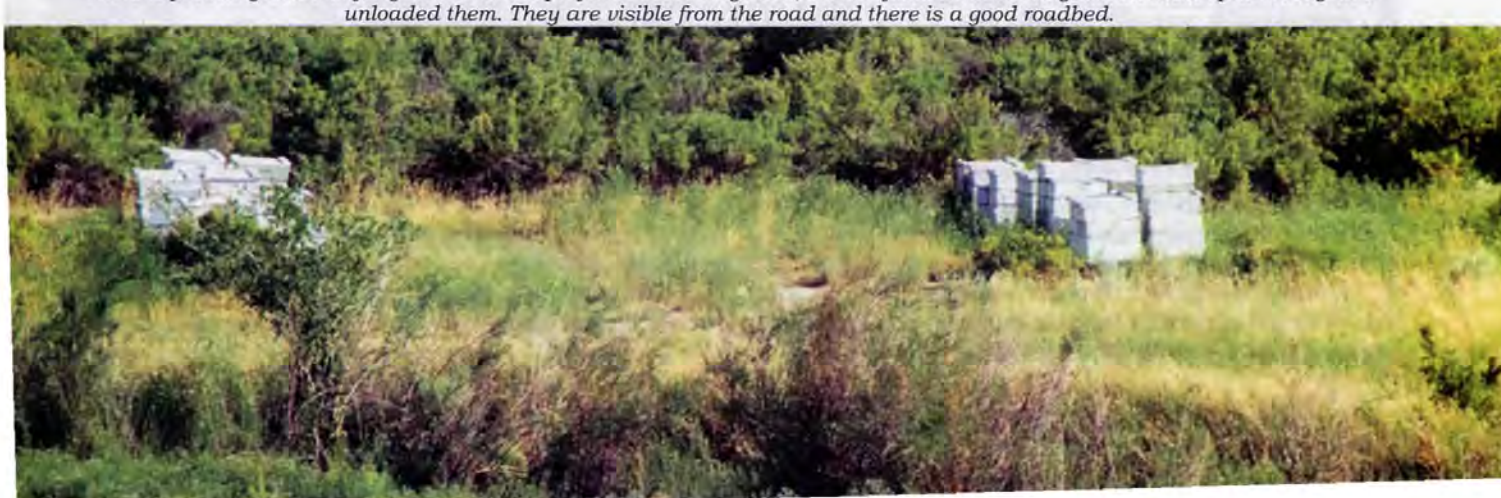
There are a few down sides to the location. A commercial beekeeper moves bees onto a farm about half a mile down the road for the Summer. While this may reduce the productivity of my hives, my main concern is not knowing where have these bees been and what they might carry into the area. The landowner says he brings the bees up from Florida, so they could be packed with small hive beetles and even carry the risk of some African genes in those colonies. Few commercial beekeepers keep bees the way a lot of 100-colony owners do, especially in regards to mite and disease control. Do I want 30 colonies providing a flood of *Varroa* mites into the area every Summer as the drone production stops and worker brood production slows? It is something significant to consider before setting up the apiary at my best friend's field.

One solution might be to talk to the neighbor and see if she would let me put my bees in the location on a year-round basis. She did complain once that the beekeeper had forgotten her yard rent for a few years, and might like to get him off the property. Now I have to weigh the beekeeper relation part of this situation. Do I want to annoy another beekeeper to get a location I really don't need but should occupy to protect my *other* bee colonies?

2. You have a pollination rental for some crop, let's say pumpkins, and the landowner says he has no problem keeping the bees there all year. What should you do?

How far is this location from the center of your beekeeping activities? Are you driving 40-60 miles for the pollination rental? If so you may want to leave the bees

An open spot in the vegetation allowed the beekeeper to back up the truck and unload the bee colonies in a double row of hives. There is probably some drifting with this setup. If these were my bees, I'd be afraid someone might load them up as easily as I unloaded them. They are visible from the road and there is a good roadbed.



Looking for an apiary site? Get someone to take you up in a small place! From a few thousand feet you can see roadbeds, lakes, ponds, swamps and potential forage. The farm has a hard roadbed running most of the length and Christmas trees may or may not provide suitable bee forage if the grower mows the "weeds" or not.

This is the same farm. It shows a possible place for a row or two of bees along the end of this drive. The bees could face east for morning sun, and receive considerable wind protection from the prevailing westerly winds. It would be away from traffic, and anyone visiting the bees would need to drive past the farm residence.

closer to home because you cannot keep an eye on them and the cost of fuel keeps going up, so it might cost a case of honey or two in lost income every time you have to drive out there. Plus, distant locations are a classic case of out of sight, out of mind, and you have to force yourself to drive over and visit them.

Knowing that pumpkins are often grown in smaller fields than corn and beans, so you should consider the potential forage surrounding the area. Are there crops in the area that require extensive insecticide use that may kill your bees? Look at a map (use Google Earth) and draw a circle of one mile and two miles around the field. Are there high-risk crops (as far as the bees are concerned), or are their woodlots, vacant fields and large farms/farmettes in the area? If this is a huge honey producing area, it might work out well, but if it is not, I'd move bees to a closer apiary.

Consider the attention the grower will give to the bees. And the respect she will give to you. Or not! Will she call and tell you the lids blew off during a windstorm and she replaced them for you to save a trip. Or will she call at 11 pm some evening to tell you to move the bees before seven so they can install new irrigation equipment?

Another thing to carefully consider is the type of farming operation this is. If it is a pick your own setup with many vegetables and berries, your hives may be an attractive source of amusement to children (up to the age of 105) and somebody will get stung. So, unless you feel the bees are well out of sight of the public, you may not want to leave your bees there longer than the pumpkin bloom in midsummer. Here's a case where moving the bees to purple loosestrife, Japanese knotweed, goldenrod and/or aster may be the right decision.

Some other issues to mull over: Will you get stuck driving into the field to tend to the bees? How about in the spring when the ground turns into sandy loam and clay soup? That stuff is just plain miserable to walk through carrying feed cans. Also, will the colonies be exposed to prevailing Winter winds? They need at least a fencerow or building to create a wind barrier.

Finally, how much income were you getting from this pollination rental? Will you feel obligated to waive or reduce that income source because it is now an apiary location? How about paying hive rent and charging full pollination fees for the work your bees are doing.

Number of colonies in one location

The hive count for a particular location depends on many factors. For starters, my 20 colonies may not be the same as your 20. I may have four over-wintered (and thus hopefully very strong) colonies and 16 two-frame nuclei hives just barely covering the frames. On the other hand you may have 20 colonies busting at the seams and ready to swarm. It may take four or more nucleus hives to produce the population needed to equal one permanent hive.

In terms of bee population one Russian colony in March may have a quarter the bee population of an Italian colony you have been feeding since mid February with pollen substitutes and candy boards. So even the over-wintered colonies can be hard to compare. Nobody wants to count bees, but an astute awareness of the gross number of bees foraging in the neighborhood might be useful in determining colony numbers in one location.

Certainly most beekeepers want to keep as many colonies as they can in one location. Unfortunately, the capacity of a certain location changes from *year to year* and *within the season*. For example, a woodsy spring yard with alder, soft maple, early tree fruits, dandelion may be a wonderful yard for wintering bees and early spring buildup due to early Spring bloom. But by the time these plants are finished, the location may be over for the season – unless the woods is filled with tulip popular, basswood (linden), catalpa and/or black locust trees. Then the season may extend into the end of Spring. Then while other locations are busting out with legumes and other Summer flowers, the woodsy location is barely able to support a half dozen colonies, and not very well at that.

Some beekeepers are perfectly happy, and fully within their rights as members of a democracy, to keep bees in one location without moving a single one. The bees can consume the honey produced from the Spring tree flowers, and the beekeeper can relax and do something else for the Summer and Fall. There is always a chance the bees will consume these early season stores and not survive the Winter. So the beekeeper may harvest the honey in

Horses might be fun to watch and feed apples to, but as guards for beehives, they have not been very satisfactory. This South Dakota commercial site is open and dry. Just perfect for sweet clover production in the Summer. It is not ideal for year-round location.

An apiary in Wyoming. This is a Summer location, near the yellow sweetclover. A nice hard roadbed provides easy access. Not knowing how high the Spring water level gets, I would not place bees in this location for the Winter and Spring without asking about local conditions. As a Winter location this one is probably too open and the bees probably head for California and the Almonds.

late June or July and then feed the colonies in the late Summer and Fall as needed. Feeding may be easier than relocating an apiary.

For permanent apiary sites, I like to try a reasonable number of hives for the region, and adjust as experience instructs. So, a dozen hives in one location that average 150 pounds of honey may indicate that it is a good idea to place 18 or 24 hives the next season. But if a yard of twelve hives is barely able to produce a super of honey each, may need a reduction in the colony count, or just move it to another location if there are yards that have done better.

Most hobby and sideline beekeepers dislike moving bees, which may require borrowed trucks and recruiting not-quite-willing help. The easiest time to move colonies is when they are small, either in the Spring, or after you have made a number of increase colonies in the form of nucleus hives. If you have four hives in one good Spring location, split them four ways and leave four nuclei hives behind to build back up for the season, the remaining 12 colonies will fit onto your pickup. The 10-frame equipment can be kept in the location, neatly stacked, of course, until the nucs require expansion room.

G.M. Doolittle kept a permanent out-apiary, as he called it. The yard was set up as a grid, three rows of 10 colonies, and when a colony died it was replaced from *within the apiary* by making up a increase colony over a queen excluder. He did not want to move boxes back and forth, risking upsetting the horse as it pulled the wagon, or making a mess in the new 1904 automobile. There were 30 colonies in the apiary, located outside Syracuse New York in farm country. I like this concept, but I have not done it like Doolittle. I would like to set up an apiary at my friend's farm with a set number of hives and not move them. His place is as rural as you get in southern Michigan – that is, it has a mixture of farms and large residential lots (five and 10 acres) that will not be further subdivided. The biggest attraction is the *potential* diversity of flowers attractive to bees that runs all season long, including spotted knapweed, sweet clover and the flowering trees that will support colonies until August. Then in late August the goldenrod and aster are relatively plentiful.

A dozen colonies in this location should do well. I don't think I will start with that many for a variety of reasons, considering the fact that I am lazy, travel a lot, and my friend will be of no help to me whatsoever, except for serving coffee and watching from a distance from a comfortable lawn chair. BC

Larry Connor offers a free email newsletter about bee books and beekeeping programs. To subscribe, email ebeebooks@aol.com and type "subscribe" in the subject field.

When Bees Carry Dead Pollen

Thomas E. Ferrari

In most fruit and nut orchards, two different varieties are routinely planted to provide a source of cross-compatible pollen. In addition, many farmers rent honeybee colonies from beekeepers to facilitate cross-pollination. The function of the bees – as far as the grower is concerned – is to transport live, compatible pollen from tree-to-tree and flower-to-flower. Obviously, once colonies are in place, beekeepers generally assume their job is complete and they simply let the bees do their work gathering pollen and nectar. Regrettably, much of the pollen their bees transport is dead! The problem is wide spread and related to plant nutrition.

The key to pollen vitality lies in two essential nutrients: *boron and calcium*. Pollen requires an optimum level of those two elements to function properly: too much or too little results in lower viability. During routine laboratory tests, we discovered that pollens from a wide variety of orchard trees – including pollinizer varieties – responded in three classic manners when analyzed for vitality. *In Summary, pollens' de facto response to boron and calcium reflected the nutrient status of plants that produced the flowers from which a pollen sample came from:*

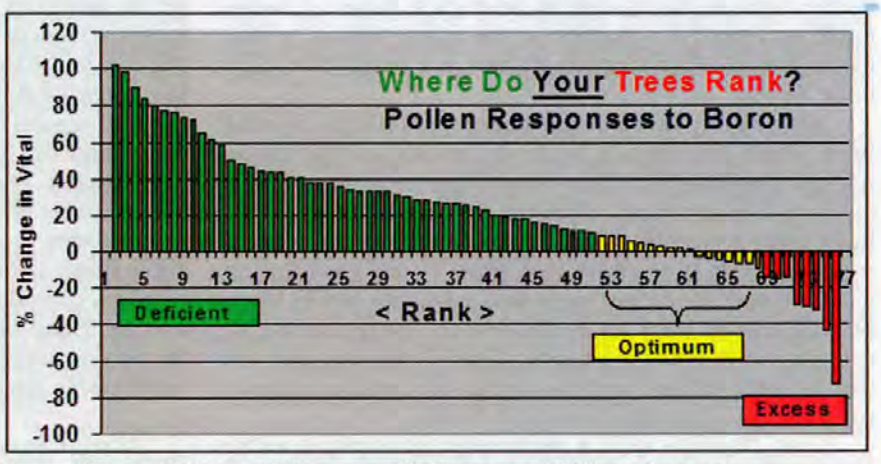
(1) If vitality increased in the presence of either B or Ca, then the mother plant that produced the pollen was deficient.

(2) If vitality decreased, the mother plant contained an excess of B or Ca.

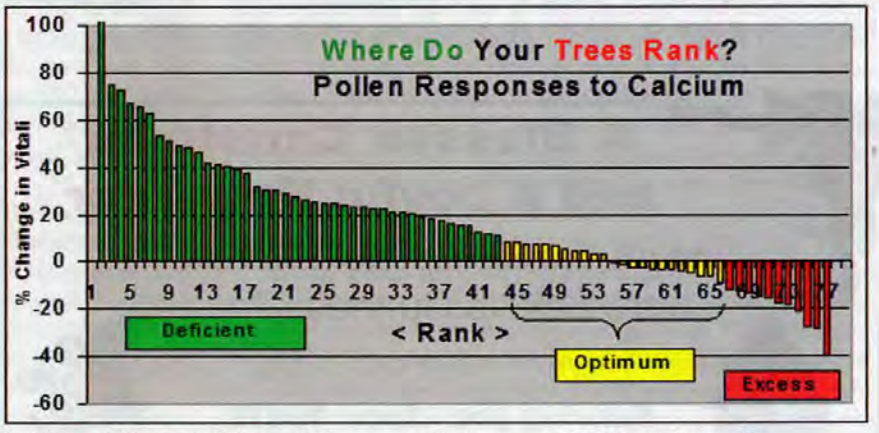
(3) If vitality changed very little, the mother plant was near optimum for B or Ca.

In 2007, we analyzed pollen from 76 different sources and survey results (Figures) indicate pollen vitality for only 23% of them were near *optimum* for boron, and 30% for calcium! Moreover, when analyzed in the presence of Boron, *pollen vitality increased* in 67% of the cases and 55% for Calcium. A conservative estimate is that the average *increase in vitality* was 41% because of a boron deficiency, and 37% because of a calcium deficiency. In actuality, the true percentage increase in resuscitation was greater because in our analyses optimum viability was not achieved for about half the pollen samples tested. In a nutshell, results indicate the majority of orchards sampled were *deficient* and produced a substantial amount of "dead" pollen. We use quotation marks because nutrient deficient pollen can be revived – the "dead" pollen was brought "back-to-life" with addition of boron or calcium to the assay medium. Field trials also indicate a deficiency can be corrected during bloom via a foliar application of nutrients. Unfortunately, pollen that contains an *excess* is not salvageable.

In the preponderance of cases, foraging bees carried a shocking quantity of non-functional pollen: deficient + excessive cases = 78% for B, 69% for Ca (Figures). When growers were questioned regarding these startling results, all indicated that their tissue analyses were near or



Boron: 67% are Deficient, 23% are near Optimum, and 11% are Excessive.



Calcium: 55% are Deficient, 30% are near Optimum, and 14% are Excessive.

within recommended guidelines. Test reports they provided confirmed their statements. It appears, therefore, that accepted nutrient guidelines for vegetative plant growth are broader than for optimum reproductive growth, i.e. pollen germination and tube development (vitality).

We believe beekeepers should help encourage growers to monitor the quality of pollen their bees carry. Why? Because, bees are not at their optimal effectiveness when a nutrient deficiency renders most of the pollen they carry dead. Moreover, the predicament works two ways: the variety to be pollinated must be at an optimum level to provide adequate nutrition to the developing pollen tube. If a variety to be pollinated is deficient, then even pollen from the pollen donor will not grow properly, even if its nutrient status is optimal, because it contains only enough B and Ca to germinate, but not enough for continued pollen tube growth in the pistil. In other words, flowers can be unreceptive to pollen if they do not provide sufficient B or Ca to sustain pollen tube growth.

It is simple to take flower samples early in the bloom period and have their pollen extracted and evaluated. A BoCal™ pollen bioassay takes less than 24 hrs. Consequently, there is plenty of time for a grower to take corrective measures during bloom if the need for supplemental B or Ca is detected. Unfortunately, our data indicate a majority of plant sources will benefit from doing so (Figures). Of course, if a sufficient amount or an excessive level is detected, then there is *no* need to include B or Ca in a foliar nutrition program during bloom. That is because a grower could make a nutrient situation worse by applying amounts that are toxic! Farmers need to be aware of pollen viability, obviously. Just examine the following results, and then spread the word!

Beekeepers should be aware that not only does it take strong bees to facilitate pollination, but fertilization also requires viable pollen and healthy pistils to produce a maximum crop yield. Eliminate one component, and fruit and nut production will decline. Beekeepers should assume a fiduciary responsibility to promote knowledge of potentially adverse pollination situations – by encouraging routine pollen viability testing for flowers they pollinate. That goal requires teamwork between beekeeper, farmer, and nutritionist.

Figures: Data were obtained from almond, plum, kiwi and cherry pollens collected during bloom, 2007. Pollen viability was measured using a vital stain and each case represents the maximum change in vitality after adding 3 levels of boron or calcium to test media. For information on how to obtain a pollen viability test, contact the authors. BC

Thomas E. Ferrari is the owner of Pollen Bank, specialixts in developing pollination programs in Bakersfield, California. Pollenbank@sbcglobal.net.

Survivor Bees Of The Olympic Peninsula

Todd Peterson

A land of rain and big timber, it seems an unlikely front in the battle against the manifold ills besetting honey bees. But the isolation of the remote river valleys of Washington State's Olympic Peninsula provide important advantages in maintaining honey bee characteristics and behavior necessary for survival.

Starting perhaps as far back as the 1920s loggers and farmers on the Peninsula established colonies of honey bees mail-ordered from Sears and Roebuck. The bees, a hybrid named Midnites, took to the cool wet conditions in the valleys of rivers flowing into the Strait of Juan de Fuca. And over the years swarms from these colonies flew off into the forest.

Beginning in 1987, *Varroa destructor* killed 90 to 95% of wild honey bees in the United States. Honey bees were gone from bee trees. If you saw a honey bee on a flower in your yard it was almost certain that that bee survived under the protection of a beekeeper. But 10 years ago, Dan and Judy Harvey, honey producers who live in the Lyre River Valley west of the tiny town of Joyce, Washington, began seeing bees foraging in areas remote from the Harveys' hives. The Harveys (**harbees@olypen.com**, www.owa.cc) put out the word to loggers, who told them the locations of active bee trees. Dan Harvey set up a "trap line" of bait hives, some of them in the Pysht River Valley, where it rains up to 150 inches a year. He set bait hives in trees that he scaled with a climbing rope and atop the stumps of enormous old growth cedars. Black bears knocked some of the hives from their perches. But Dan Harvey began capturing swarms of wild bees, approximately 25 swarms in the last 10 years. Somehow the descendants of the mail-order bees had survived the ravages of *Varroa*.

The Harveys, responding to requests for wild stock, sent what they call "survivor queens" to Dr. Steve Sheppard at Washington State University, for use in WSU's queen breeding program.

One of the nuc yards west of Port Angler, Washington.

Dr. Sheppard, during a 2006 conference for Washington and Oregon beekeepers, noted:

> *Just over a decade ago feral honey bee populations were still flourishing in the forests of North America. Genetic studies showed that the feral populations were quite variable genetically and that these populations probably contributed genetic variation to the commercial populations in some areas.*

In 1993-94 and then again in 2004-05, Dr. Sheppard analyzed the genetic composition of United States queen breeding populations. He found that in 1993-94, 603 breeder queens were producing replacement queens for one third of all managed colonies in the U.S. A decade later, that number of breeder queens had dropped to 473. In 2006 he reported that preliminary analysis suggests a decline in genetic variation among U.S. commercial queen breeding populations.

Genetic variation is essential to any organism's ability to survive – its ability to adapt to changing environmental conditions and, in the case of the honey bee, to dire threats like *Varroa destructor* and exotic viruses.

In the 1990s fascinated by the potential of the "survivor stock" their remote location harbors, the Harveys expanded their beekeeping from honey production and pollination to queen breeding. "The light went on for me" Dan Harvey said "about the importance of controlling the characteristics of your drone population." The organizing principle of the Harveys' breeding program is augmenting genetic variability. What makes the Harveys enterprise unique is their combining of genetic traits from bees surviving untended in the forests of the Olympic Peninsula with

Wild swarms are caught in a variety of ways.

genetic traits from Suppressed Mite Reproduction (SMR) and Russian queens.

In the journal of the Western Apicultural Society (Winter 2007) Debbie Delaney, WSU bee geneticist writes, "The past population of feral honey bees was thought to serve as a reservoir for genetic variability... The reanalysis of the feral collection ...further supports that the feral population acted as a genetic reservoir..."

The Harveys began stationing mating nucs near active bee trees in remote locations west of the Lyre River. From a contractor affiliated with the USDA bee laboratory at Baton Rouge they obtained Russian queens. One hundred and fifty years ago, with the opening of the Trans Siberian railroad, beekeepers brought European honey bees, particularly Carniolans and Caucasians, into the Russian Far East. During that century and half the European bees were exposed to and developed resistance to the *Varroa* mites associated with the East Asian honey bee *Apis Cerana*. The Harveys' purpose is to augment the mite resistance and hygienic behavior of the Olympic Peninsula survivor stock with these same characteristics from Russian and SMR queens. From Glenn Apiaries in northern California, they obtained SMR breeder queens originally developed by Dr. John Harbo.

From the beginning of their bee breeding the Harveys have asked the question: are the Olympic Peninsula's wild bees surviving because of their isolation from *Varroa*, because of local conditions or because the bees possessed self-preserving characteristics? Judy Harvey thinks part of the answer is nutrition. She surmises that fully meeting bees' nutritional needs may strengthen their immune systems allowing the bees to ward off viruses accompanying *Varroa* and other diseases. She says that Sorrel, which grows in the alder bottoms on the Peninsula's north coast, may provide foraging bees with the medicinally beneficial compound oxalis. Stinging nettle, which also grows here in profusion, is a good source of formic acid. Both oxalis and formic acid are now used as organic miticides. And because the Peninsula's dry Summer season is so short, the bees have adapted to become, the Harveys say, "tremendous gatherers."

Inspecting a breeder colony.

The Harveys have observed the Peninsula's wild bees gathering pollen at temperatures below 50 degrees Fahrenheit, the generally accepted lower limit of flight activity. They regard this ability to forage in cool conditions as evidence of the wild survivor stock's adaptability. Dan Harvey hopes this evidence will encourage research into the honey bee's natural ability to adapt when not stressed by some current beekeeping practices such as migratory bee transportation, nutritional deficiency from single-crop food sources and synthetic chemical miticides. The Harveys would like to see further investigation into the role that varied forage plays in maintaining honey bee health.

In selecting queens from which to produce the queens they sell today, the Harveys use two principal tests: the hygienic behavior test and the *Varroa* screen wash test. Their benchmark for the former is at least 90% removal of dead brood within 24 hours. The standard for the latter, defined at Cornell University, is 96% *Varroa*-free in the Fall. The Harveys take eggs and drones for queen

Checking, checking, checking – attention to detail is important.

Virgin queens from an Olympic Wilderness Apiary mini-mating nuc.

production only from those colonies meeting these standards. They maintain isolated mating yards to control drone characteristics.

In *Natural Beekeeping, Organic Approaches to Modern Apiculture,* Ross Conrad writes:

> *There are many traits that breeding can help bring forth in the beeyard. The typical characteristics that beekeepers have sought to encourage include high honey production, gentle demeanor, low swarming tendencies, fast Spring buildup, and conservative honey usage during Winter. However, the most important trait during these times of stress on the honey bee population is pest and disease resistance, with* Varroa *destructor by far being the biggest challenge facing the honey industry in the late 20th and early 21st centuries. As a result, the breeding that is currently being done ... is among the most important work going on in apiculture today. The effort to help the bee reach a level of immunity against* Varroa *and other pests and diseases is the long-term solution required to ensure the ultimate survival of the species. (Conrad, Ross. Natural Beekeeping, P.87-88. 2007)*

To increase likelihood of acceptance, Don Harvey uses a push-in cage to introduce a breeder queen.

To this solution, Dan and Judy Harvey, through their close observation of local conditions, their inquiry into the environmental and human history of their region and their enterprising connection with modern honey bee research, are making a unique contribution. BC

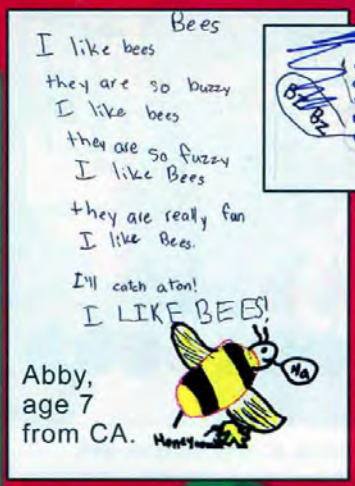
Todd Peterson is a beekeeper and freelance writer from Whidbey Island, Washington.

All The Buzzz in...

Hello Friends,

Have a very happy holiday season. Be warm, be strong, be happy, and of course be very, very sweet.

Bee B. Queen



Abby, age 7 from CA.

Amanda, age 5 from CA.

Azure, age 9 from NM

Maddie, age 6 from MI.

Lori, age 4 from Manitoba, Canada.

And the winner is...

The names of all the Bee Buddies who sent us artwork, poems or questions over the last year were placed in a drawing. And the winner is...Rickey Jenkins from Ohio. Rickey will receive the award winning CD "I Was a Supa-Dupa Pupa!" by Lucas Miller, the Singing Zoologist. You can learn more about Lucas or order your own CD by going to <lucasmiller.net>

Bees in Hollywood

There is a big buzz about bees because of the new animated film "The Bee Movie." Barry B. Benson doesn't want to spend the rest of his life making honey. On a special trip outside the hive, Barry's life is saved by a florist. He soon discovers that people have been stealing and eating honey. Then things really start to buzz.

This is a great time to tell your friends some amazing bee factoids.

To make one pound of honey it takes bees visiting two million flowers.

The worker bees are female. The drones are the males.

The worker bees collect nectar from flowers to make into honey.

If you added the flights of all the bees in a strong hive together, it would be the same distance as flying to the moon every day.

One queen lays all the eggs in the hive.

For one pound of honey it takes bees flying the distance of 55,000 miles. That is about the distance of around the world twice.

A bee can fly 15 miles an hour.

Everytime you eat pickles, pumpkins, watermelon, and cucumbers you can thank the bees for helping to make these and many more foods that we eat. Honey bees are the most important pollinators. Pollinators rule!

... Bee kid's corner

Produced by Kim Lehman -www.beeladyprograms.com
www.beeculture.com
December 2007

Pollination Word Game

How many other words can you make from the letters in POLLINATION?

For example you could make the words tan, nail and lion.

It took about one week for Enos Peachey, age 13 from PA. to find 80 words.

To find the list of words, look for Bee B. Queen hiding somewhere in this magazine.

Lebkuchen (Spice Bars)

This sweet treat is from Germany.

2 cups honey
5 ½ cups flour
¾ cup grated unblanched almonds
1 tsp. cinnamon
½ tsp. powdered cloves
¾ cup mixed candied fruits (orange, lemon and citron peel)
½ tsp. baking powder
Egg White Icing (see recipe below)

Heat honey until thin; do not boil. Mix in all other ingredients except icing. Turn onto floured board and knead until smooth, adding a little flour if necessary. Roll with a floured rolling pin to ½" thickness. Grease and flour a baking sheet and lay rolled dough on it. Bake in pre-heated 350° oven about 20 minutes. Spread with icing while hot. Cool before cutting into rectangles.

From www.californiamall.com

Egg White Icing
2 egg whites
1 ¼ cups powdered sugar, shifted
1 T. lemon juice

Whip egg whites until they stand in stiff peaks. Add sugar and lemon and juice and continue beating until thick and glossy. Spread on cake or cookies with a spatula.

More Holiday Honey Treats

Are you looking for more adventures in the kitchen? Try making Panforte (pan-FOR-tay) a Christmas treat from Italy. For the recipe and photos, go to <www.annamariavolpi.com/panforte.html>.

Fun With 4-H

Introducing the 4-H Daviess Co. Bee Charmers Club in Kentucky. Five kids, ages 9 – 16 have experienced every aspect of beekeeping including making equipment, catching a swarm, treating diseases and extracting honey. The ever enthusiastic Carol Mark is serving as their fearless leader and mentor. This year they will sell their honey at a farmer's market and learn about marketing, money management and the democratic process as they decide how they will use the profits.

These 4-H kids learned all about research and writing in preparation for the annual 4-H essay contest. Member, Danielle Jarboe, won the essay contest for the state of KY.

Mathew, Melanie, Kevin and Garret

Essay Contest

The essay topic for 2008 is "The Results of Honey Bee Pollination in My Community." Students interested in writing should contact their local 4-H offices for contest details. The state selection must be done through the 4-H system. For more information about the 4-H Beekeeping Essay Contest go to www.honeybeepreservation.org or call 912-427-4233.

Beecome a Bee Buddy

Send two self addressed stamped envelopes and the following information to: Bee Buddies, PO Box 2743, Austin, TX 78768. We will send you a membership card, a prize and a

Name: _____

Address: _____

City, State, Zip Code _____

Age: _____ Birthday: _____

E-mail (optional) _____

Send all questions, photos and artwork to: beebuddies@hotmail.com or mail to the above

Treating Nosema

Kim Flottum

Once you know your bees have it, you must do something about it.

The flurry of research papers published in the last couple of months on the causes of Colony Collapse Disorder still haven't come up with anything concrete as the causal agent. Maybe a virus, maybe a host of things acting in concert, maybe simply the symptoms of extreme stress.

As of mid-November, a repeat of last Winter's problems haven't begun in earnest, but some beekeepers that had symptoms last year are again reporting collapsing colonies, as are some that didn't have the problem. Numbers remain elusive however – for both beekeeping operations affected, and colonies collapsing.

But regardless of the severity of this season's attack, one glaring fact gleaned from the original paper stands out. Of the apiaries sampled, *that had CCD* symptoms, 90% had *Nosema apis*, and 100% had *Nosema cerenae*. Of the apiaries sampled that *did not have CCD* only 47.6% had *Nosema apis*, and only 92.1% had *Nosema cerenae*. I use the word only here carefully – there was a monumental amount of all kinds of Nosema floating around.

This is not good.

No matter what the scientists figure out, this level of Nosema infection cannot be dismissed. We were concerned last May when we explored *Nosema cerenae* and what it was capable of and the data from the CCD papers only reinforces that connection. We went to Wildwood Labs this month to have them show how to sample for Nosema. And we also thought it prudent to closely examine the most common treatment available relative to dose, timing, mixing, effectiveness and application technique.

Fumigilin-B is an antibiotic manufactured by Medivet Pharmaceuticals Ltd., in Alberta, Canada. It is sold in 0.5g, 2.0g and 9.5g containers. It is soluble in sugar syrup (either Spring mix of 1:1 sugar:water or Fall mix of 2:1 sugar:water work well). The label recommends that Fumigilin-B should be dissolved in water or syrup at room temperature. For best results, according to the label, heat the required amount of water to 95°F - 120°F (35-50°C), then remove the heat source and add the Fumigilin-B and the sugar in that order.

Following is a chart for Spring or Fall feeding, based on colony size.

	2 Story Colony	1 Story Colony	5 Frame Nuc	Pkg.
Spring	1 gal (20,000 bees)	1/2 gal (12,000 bees)	1/2 gal (12,000 bees)	1 gal
Fall	2 gal (30,000 bees)	1 gal (18,000 bees)	3/4 gal (8,000 bees)	–

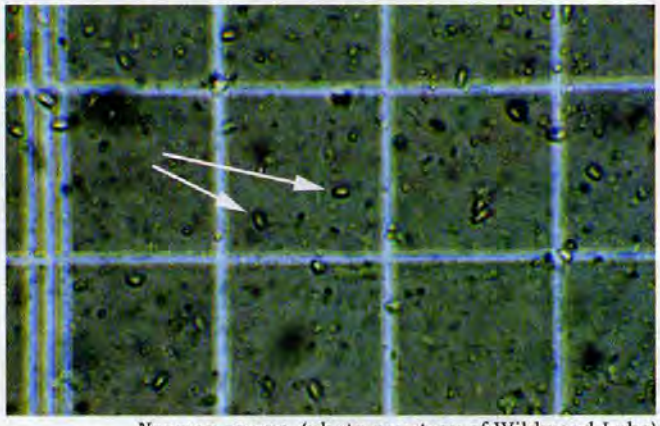
Feeding these amounts to colonies of these sizes will put 190mg Fumigilin-B in a Fall colony, and a 95mg dose in a Spring dolony.

For mixes other than above, the following chart should be used, along with the conversion chart below.

Preparation of Medicated Syrup:

Water	+Sugar	=Syrup	+Fumagilin-B
44 gallons	+727 lbs.	= 100 gallons	+16 ounces (454 g)
9-1/3 gallons	+152 lbs.	= 21 gallons	+3.4 ounces (96 g)
2-1/4 gallons	+37 lbs.	= 5.2 gallons	+0.85 ounces (24 g)
1/2 gallon	+8 lbs.	= 1 gallon	+0.18 ounces (5 g = 1 rounded teaspoon)

Additional measurements
1/2 teaspoon = 1.5 g Fumagilin-B (31.5 mg actively)
1 teaspoon = 3.0 Fumagilin-B (63 mg activity)
1/2 tablespoon = 4.8 g Fumagilin-B (100 mg activity)
1 tablespoon = 9.5 g Fumagilin-B (200 mg activity)
2/3 cup = 50 g Fumagilin-B (1.05 g activity)



Nosema spores. (photo courtesy of Wildwood Labs)

Of course all medications should be administered only when necessary. Current recommendations are to treat for Nosema when spore count/bee exceeds 1-1.5 million. However, *Nosema cerenae* is an unknown right now. Some beekeepers are cautious, and are Spring treating for *Nosema apis*, but having samples examined later in the season, especially for *Nosema cerenae*. If warranted, a Fall treatment, after honey supers are removed, can then be made.

You may need to replace full honey frames with empty frames to make room for medicated syrup in the Fall. Medivet recommends saving these until Spring and replacing in the colony they came from.

Ultimately, Nosema resistant or tolerant bees are the goal, but for now, be aware of what this disease can do to your bees, and what you can do to reduce or prevent problems.

Fumigilin-B breaks down in sugar syrup rapidly. It is recommended that medicated syrup be consumed or stored in the comb within 48 hours after mixing. When conferted Fumigilin remains stable for months in a colony. BC

THE WORLD HONEY MARKET

Ronald Phipps

As I write this report the U.S. Dollar has plunged to an all time low relative to the Euro and the price of oil has soared to an historic high. Both of these factors in the macro-economic environment will exert an inexorable and significant impact upon the honey market.

The Euro began at a relation of 0.67 Euros to $1.00 and skeptics doubted the Euro would ever attain parity with the U.S. dollar. Now the ratio is about 1.42 Euros to $1.00. The dollar's weakness is a consequence of the U.S. triple deficits, consisting of national debt, trade deficit and consumer debt. With the surge in foreclosures on U.S. residential and commercial properties due to subprime loans and the consequential bank crisis, pressure on the Federal Reserve to lower interest rates and ease pressure on foreclosures is mounting. But lower interest rates for U.S. dollar denominated bonds will tend to further weaken the U.S. dollar. The high costs of oil will make the internal transportation of cargo and the export costs increase, barring a global recession.

The impact of the above two factors is to make import prices substantially increase. At the present time we already witness this tendency. American honey packers find American honey to provide some of the best values of all honey. The prices for American white clover honey and several excellent varietals are currently 10-20% lower than prices for comparable qualities from Argentina and other South American markets.

Argentina and South America

The 2006/2007 Argentine honey crop was about 75,000MT, and it is projected that total exports will be 80-85,000MT due to some carryover from the previous year. Of that quantity approximately 25% was white honey and the balance was extra light amber and light amber. From January to September, 61,000 MT have been exported and another estimated 10,000 MT have been sold and will be shipped in October and November. Of the 61,000 MT exported already, about 35% went to Germany, 27% to the USA, 10% to the UK, 7% to Italy, 4% to France and the 17% balance to 40 countries.

The demand for the remaining stocks, estimated to be 10,000 MT, far exceeds supply. For every container available, there are requests from Europe alone to buy three to four containers. The U.S. dollar prices paid in Europe on a C and F basis for both industrial and bottling grades are equivalent to from $1.05 to $1.15/lb. ex-dock USA, depending upon the type of honey and port of delivery. Because the Euro is at a historically high value, the European market pays such high U.S. dollar prices without significantly affecting either the actual Euro costs in buying the honey or the prices in Euros of selling honey in the domestic European markets. For these reasons Europe is the preferred export market for Argentine honey.

Since Argentina has expanded the geographic range of honey production, diversified the floral sources and extended the period of honey production from January-March to November-April, new types of honey are becoming available and exports will commence earlier for some limited quantities. But European packers are aggressively seeking deliveries to arrive in December to replenish depleted inventories.

The approaching crop will obviously be influenced by the weather. Normally the Argentine honey crop ends at the end of February in the main producing areas. This year it ended in January. This created considerable bee losses which were compounded by a very hard and long winter that included snow in Buenos Aires, which is very, very rare. There were protracted periods of dryness. Normally the Winter bee losses are 10%, but in 2007 they were 25-30%. With the significant reduction in bees, the early flowering was used for the recovery of bees, not the production of honey. It is clear that the early 2008 Argentine crop will be both late and below normal. During the first three weeks of October, there were good rains, and the weather at the end of October began to warm. This has allowed the beekeepers to increase the number of bees and restore their strength. But production of honey will have to wait until December rather than November.

The eastern European countries had poor crops so Europe remains very eager to get new shipments of Argentine honey. The beekeepers' prices are very high. But there are very few Argentine exporters willing to buy at the price levels that the beekeepers are demanding. Those price levels are equivalent to $1.17/lb. ex-dock U.S. port. Some Europeans will pay these prices because they are in urgent need of Argentine qualities. But in general more realistic market-oriented prices will require the actual extraction of honey in November and December. The beekeepers will need to move some of the early production.

U.S. Honey Crop Down. China's Exports Down. Canada Has Poor Crop.

Uruguay and Chile have a more modest production of approximately 12,000 and 10,000MT respectively. Both countries have traditionally exported most of their stocks to Europe. Both Uruguay and Chile are sold out of their 2007 crop. Uruguay, like Argentina has suffered bee losses due to both floods and a cold Winter. Even though Europe is paying substantially higher prices than is the North American market, exporters in Uruguay and Chile are interested to expand their exports to the U.S. This is a function of the non-tariff trade barriers that surround the European market. Those barriers are so strict, and, many believe, scientifically and statistically unreasonable, that both 1) the costs of testing for all potential problems and 2) the risks of rejection are so great that many exporters dare not, or prefer not, to ship to Europe. This reluctance includes both American and Canadian honey producers.

False positives are common when one deals with

Brazil Goes Organic. Snow In Buenos Aires. False Positives Common.

testing a chemically complex and highly heterogeneous natural product such as honey. It is clear in the eyes of many that laboratories are not testing valid health risks as much as they are "testing the sophistication of machines." We witness test reports at lower and lower levels of detection that approach the meaningless, indicating a few molecules from tens of billions of molecules. Sooner or later, and better sooner, the international honey industry, like other food industries, must recognize what beekeepers realize every day, viz. bees are vulnerable to disease and, like other animal life, must be protected. Developing reasonable and realistic standards and internationally harmonizing those standards must become a goal of a modern and globally integrated economy.

Brazil's honey crop is becoming more important to the U.S. This is especially true for the organic honey market. Brazil has many virgin areas and has become a major source of organic honeys and thus, can serve the growing market for organic honey. Brazil produces honey continuously throughout the year. Brazil's honey crop is about 35,000 MT, half of which is consumed domestically and the other half is exported. Total exports were down 11.3% between January and September, 2007. Brazil was hoping to re-enter the European market during the second half of 2007. Bureaucratic inertia appears to be further delaying Brazil's ability to satisfy the demands of the EU Commission. That being the case, Brazil will continue to look to the U.S. as an important export market. Prices for organic honey are reasonable but prices for conventional Brazilian honey are non-competitive with the prices for American honey. It is anticipated that when the EU accepts Brazilian honey, perhaps in June 2008, the Brazilian prices will increase by about 30%.

China

The Chinese honey industry's ability to ship to the U.S. has rapidly diminished. There is less than a handful of shippers able to ship to the U.S. and those that are able to ship face three hurdles: 1) financial weakness, 2) very rigorous, expensive and time consuming requirements to meet Chinese governmental quality requirements to export and 3) pending final reviews by the U.S. Department of Commerce that will undoubtedly dramatically increase anti-dumping rates. The closing of the bond loophole has resulted in a decline for Chinese honey to only 5% of total dollar value of imports into the U.S.

There is, we should note, substantial concern among beekeepers and packers that circumvention has occurred and will be attempted through either "packers blends" or through third countries like Russia, Mongolia, India, Thailand, Malaysia, Indonesia and Australia. Efforts to prevent such circumvention are underway in Washington.

The saving grace for Chinese beekeepers is the fact that China has a population of about 1.5 billion people. Honey is becoming more popular as a food ingredient in China allowing factories that exported honey to shift to serving domestic demand. China's honey exports to the world were down 26% in the first seven months of 2007 relative to the preceding year.

Vietnam

The Vietnamese 2007 honey crop was about 16,000 MT. Most Vietnamese honey has found a ready market in the U.S. Almost all of this year's crop has been exported except for some stray containers of very nice Longan honey that is produced July to November. Prices remain very firm. The Vietnamese anticipate gaining increased access to the European market beginning May, 2008. Vietnam's major honey crop is rubber honey which serves the industrial market. That crop is produced February to May which means Vietnamese honey will be absent from our market until new crop arrivals in March to June. It is anticipated that the EU will open for Vietnam in May 2008.

North America

The U.S. honey crop was again way below normal. Total crop estimates range from133.7 million pounds (*Bee Culture*, November '07), to 145 to 160 million pounds. The California crop was severely hurt by the worst drought in a century. The southeast states had poor crops of several important honeys including orange, gallberry and tupelo honey. The southeast remains in the grips of a protracted drought that threatens supplies for both agriculture and human needs. As I write southern California is ablaze in wildfires. Those wildfires have destroyed orchards and devastated fields of wild sage and buckwheat plants. Sage honey was non-existent this year and it will take at least three years for the wild sage destroyed by drought and fire to recover. The impact of global warming hovers over agricultural production, including honey production. U.S. Beekeepers are also reporting concern at the commencement of Autumn increased concerns with the health of their bees. Some beekeepers have suffered colony collapse disorder this October.

Canada

The 2007 Canadian honey crop is about 60% of a last year's bumper crop. The reason this year's crop is reduced seems to lie in the fact that last year's ideal weather conditions tempted Canadian beekeepers to overwork the bees in late Summer 2006. It is a common phenomena that Winter losses are typically greater after a bumper crop. The early Winter of 2006 exacerbated this typical phenomenon. Bee losses going into 2007 and poor weather in 2007 resulted in Canada's reduced crop which occurred from east to west with a possible exception of Manitoba which had some areas that were good.

The Canadian dollar has also greatly appreciated in value relative to the U.S. dollar. This factor will influence Canadian honey, wax and honey by-product prices just as currency changes are influencing honey prices from South American markets. Canadian beekeepers are plagued with a weak U.S. dollar, high transportation costs and a poor crop.

Honey and Health Symposium

The organization of the symposium on honey and

health, as reported elsewhere in this issue, is proceeding well. Scientists from Europe, the U.S., Australia, India and Israel will speak on a broad range of scientific topics in Sacramento in January, 2008. There is great interest and support from beekeeping and honey organizations in the U.S., Canada, Argentina, Brazil and Australia. We believe that a positive health agenda has the potential to make the symposium a transformative event in the history of our industry. Similar efforts to use good science to develop and market a health message have resulted in increased consumption, high qualities, greater varieties and increased remuneration for all segments of the relevant industries. There is a lot of talent and hard work coming together to create this landmark event. BC

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Winter Beekeeping

James E. Tew

Bees in the cold

Winter, for most of us, is a slow bee management season. Everything that we had planned to do needs to have been done. Common recommendations are to prepare equipment, read, and wait. It doesn't take many Winter seasons of performing those tasks before boredom sets in. The blunt fact is that many beekeepers take a Winter break. For just a few months of the year, the intensity of beekeeping wanes. The bees are quiet and patient. I suppose we should be, too.

Without a literature review to support my comments, it would appear that Winter is not particularly the bees' best season. The fact that honey bees are able to withstand cold weather at all, is truly an accomplishment for insects that essentially have a tropical ancestry. As eons pass, no doubt bees will get better at surviving the season, but for now, winter colony losses are a common aspect of beekeeping.

Beekeepers in the cold

No doubt, I too, am still adjusting to the cold. I don't relish some dismal, cold day's assignment of Winter bee management tasks. A wintering bee yard seems to be a yard on a different planet – quiet, mysterious, but promising. The tracks of last season's lawn mower are visible just under the snow. The snow drifts and covers the lower entrance making the upper entrance all the more important. Beekeepers from warmer climates can also see the marks of last season's mower – only they are not covered with snow. True, bees in warmer climates are able to take more cleansing flights, but those very flights require the colony to expend stored resources. For all beekeepers, like it or not, Winter is a quiet season for our bees. Even so, there are tasks that we can implement that are helpful to our quiet colonies during cold months.

Hive relocation

There probably is no better time to move colonies within yards or move colonies to new yards. The colonies are as lightweight – assuming you removed supers and extra equipment – as they will ever be. A few common reasons hives sometimes need repositioning are: because they are too close together, too close to the neighbors, or are not sitting level. When the bees are quiet, and not readily flying, this can be a good time to make changes. Obviously, the cluster should not be broken and the colony should not be needlessly jostled. Another point is that you will probably be wearing heavy Winter clothes and those parts of you that are exposed will be numbed by the cold so the occasional sting won't be as painful as a typical Summer stings.

With proper preparation, long distance moves can be accomplished during cold weather. This works better if one is moving from a cold climate to another climate that is, at least, cool. If one is moving from a cold climate to a warm climate, the colonies will need to be screened at the entrance and probably on the top also. The outer cover can be repositioned on top of the screen for transport.

You should know that moving bees inside a closed truck can result in an uncanny internal colony temperature increase. On a beehive move I made many years ago, I put bee colonies inside a closed truck. With the outside temperature in the 20s and snow and ice everywhere, the colonies in the enclosed truck were actually overheating. I was forced to stop every few hours, buy 100 pounds of ice – to the amusement of the store clerk – and ice my bees down. As harsh as it may seem, beehives, having their entrance face away from the prevailing wind, travel better in an open truck. But you should also know that when you come from a cold climate to a warm one, upon warming up, the bees are fanatical about taking flight. The resultant bee fecal matter, from bees voiding themselves on the wing, can be impressive. If they can get out, remarkable numbers of bees will take wing and cannot be coaxed back to the hives short of waiting until dark. While the clerk selling me ice was amused, the people running the gas pumps will not be amused at all.

Bees in the cold.

Beekeepers hauling bees to warm climates will frequently wait until right about now (mid December) to make such long trips. If bees are taken to warm climates too early, they will brood back up during the Fall and early Winter and use extensive amounts of stored food to do it. This is avoided by waiting until Winter is clearly present at both locations.

Regulatory requirements vary. When moving bees from one state to another, the state regulations of both states should be followed. Some warm states will restrict movement into the state when colonies cannot be immediately checked for common bee diseases. Also, some cool weather states are restrictive about having bees come back in from warm climates due to the possible inclusion of pests like small hive beetles or Africanized bee stock.

Finally, you should know that the long drive itself is no walk in the park. You will need to keep moving and you will be dead tired. You will be nervous when stuck in traffic with a load of bees behind you. On the beginning of the trip, you will worry that the bees are freezing to death while on the warm end of the trip, you will worry that they are overheating. Other passing drivers will scrutinize your load and you will absolutely fear mechanical failure or a flat tire. Can it get any worse? Yes, you will come home with an empty truck and will make the return trip empty when returning to retrieve the colonies – at nearly $3.00 per gallon for gas. You can buy a lot of packages next spring for the money and time that you will spend on this venture. True, bees build up earlier and Winter easier in warm climates, but there are no free lunches. If moving bees to a warm climate is the perfect answer for efficient wintering, we would all be doing it. The entire migratory picture must be considered when considering a long-distance move for wintering bee colonies.

Wintering colonies in a cold climate

For the majority of us who keep our bees in a cold climate, what can we do to be helpful during hard Winter? Truthfully, not much. In articles I wrote earlier this past season, I described my painful loss of bee colonies due to starvation and a late season freeze. To better prepare my bees for future Winter emergency measures this past Spring, I only supered with deeps this past Spring. I do now have some extra honey in deep frames that I can give to needy colonies should the Winter need arise. Of course, I got absolutely no surplus honey crop due to this management move. Other than giving honey in combs, there is no efficient way to feed wintering colonies in a cold climate. I once knew a commercial beekeeper who would put granulated sugar on the inner cover of starving colonies to help them get through lean times. This was a desperate move and probably only resulted in more loss – dead bees and the cost of sugar. For the present, there is essentially no efficient way to feed wintering colonies other than give them honey in combs.

It is an unsettling fact of beekeeping that some wintering colonies die. If it appears that the cause of death was not from tainted honey stores, those remaining stores can be consolidated and put back on other needy wintering colonies. In any part of Winter, bees will require the occasional warmish day to reposition the cluster around the additional stores you have given them. If the Winter season has progressed to the extent that next season's brood nest has been started, the wintering bees will need the occasional warm day to move honey stores from storage to the vicinity of the brood nest. Clearly, a long, hard, persistent Winter is hard on the colony. A mild day to reposition stores and take cleansing flights is truly valuable.

Winter wrapping bee colonies

On those cold Winter nights, how good does another of my grandmother's hand-made quilts feel? Absolutely great. It would seem to logically follow that adding blankets (or Winter wraps) to our colonies would make them cozier, too. No doubt it does, and Winter packing boxes are available from bee supply companies, but we have gone down this path and then returned from it many years ago. The bee supply companies of the day even manufactured insulated hives and called them Doubled-walled Chaff Hives. In the early 1970s and 80s, some northern beekeepers used roofer's felt (tar-impregnated paper) and wrapped colonies four to a pallet. Nowadays, I must report that I have not seen a wrapped colony in many, many years. Though extra winter clothes definitely warms us on cold days, it does not seem to neatly apply to bee hives. If a wintering colony is warmed, it wants its foragers to leave for flights. Making it too warm inside the hive seems to encourage the bees to fly on days too cold to fly. Bees leaving the hive die. With all the modern foam insulation productions now available, surely something can be developed that would insulate a wintering hive, but I don't know of anything.

Ironically, it has been reported that Winter packing might actually hurt the overall colony. It seems that on the occasional warm day, the packing served to keep the inside of the colony too cool for the bees to break the cluster. In other words, on warm days, the packing kept the warmth out of the hive. I know some of you still Winter pack your colonies. I am not saying it is uniformly a bad thing, but this concept has not worked its way into mainstream Winter colony management.

Bee dysentery

A common cause of bee dysentery is Nosema. By the

This colony has some dysentery issues.

time you see your colonies fouling themselves in Winter; it is too late to do anything. Clearly, this foul condition causes disease and stress within the colony, but it is difficult and expensive to treat so all-too-often Nosema goes untreated. During October and early November, ideally I should have installed treatments of Fumigilin-B to control this condition. I meant to, but as usual, I didn't. Nosema has been called the high blood pressure of the beehive. It is a quiet, unseen malady until the symptoms are expressed in the Winter. If at all possible, treating colonies is clearly a good idea, but it is just one more beekeeping task needing implementation. If dysentery appears rampant in your colonies during the upcoming Winter, treat next Spring. Nothing can be done during the Winter.

Dead bees in front of the colony

A few dead bees in front of the wintering colony are presently considered to be a good thing, while a lot of dead bees in front of the colony is a bad thing. When does good become bad? A few tens of bees on snow in front of the hive are probably unavoidable while hundreds or even thousands of bees at the hive front are bad. An excessive number of dead bees could mean anything – poor wintering genetics, Nosema, and *Varroa*-weakened bees are common examples that cause excessive numbers of Winter-killed bees. As is so often the case, you can't do anything about the population loss. Obviously, before next Winter, try to figure out what went wrong. Possibly sterilizing equipment before reusing it would be helpful.

Snow-covered ground on a bright day seems to screw the bees up. Some bees seem intent on suicide. They fly out, drop onto the snow, and melt into a shallow hole in the snow. That's the end of them. Maybe they were diseased or just confused. However, NO bees on the snow in front of the colony imply that the colony is not ridding itself of bees that are dying normally. In fact, no dead bees frequently means the colony is already in trouble. Again, all you can do is feel frustration.

The two Ms

So much as possible, keep mice and moisture out of the colony. Lots of frost or moisture in the hive means it needs more ventilation. Mice are obnoxious invaders. They chew hive parts and eat comb. They keep the bees stirred up and agitated. Be sure mouse guards are on the colonies ***before*** the mice are in them.

Truthfully

Once Winter really begins to express itself, your beekeeping obligations are essentially none. Winter truly is the quiet time for you and your bees. Sorry. BC

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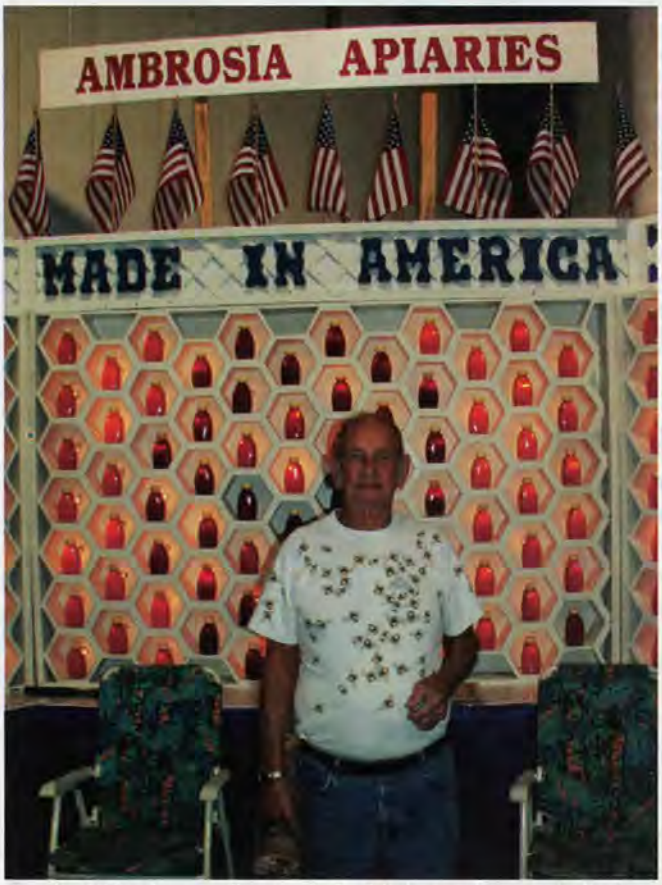
Jessie McCurdy — A Georgia Institution

Jennifer Berry



Jessie McCurdy proudly stands by his honey bee comb display at the Georgia National State Fair.

This past Summer Dan Harris (our lab technician) and I traveled to Perry, Georgia to relocate some colonies. We were in search of a Summer nectar flow. We had 40 colonies with newly installed packages on wax foundation. The bees needed a flow in order to draw out the comb and hopefully store enough honey to survive over Winter. Unfortunately, in Athens, the nectar flow usually shuts down by the end of Spring. Except for a few gardens here and several flowers there, the bees can't find a drop of nectar for the remainder of the year. However, just three hours to our south it's a whole different ballgame. Summer time in South Georgia offers a bounty of nectar and pollen from fields planted with a variety of crops. From horizon to horizon, laid out in a patch work of green carpet, you have cotton, cantaloupe, peanuts, watermelon, squash, soybeans and a variety of other crops just begging for bees.

But not any ole' field would do, so we asked our friend Jessie McCurdy for help. His bees have been pollinating crops in the Perry area for decades. He knows the farmers, fields, and when and where to expect a flow. He knows which cotton fields are fixin' to bloom, or which cantaloupe field isn't worth putting bees on (because they didn't irrigate). Within a few hours our bees were sitting on the edge of a cotton field that bees dream about; for as far as you could see, cotton blossoms in all directions.

Since Jessie came to our rescue, it was our turn to return the favor. We drove over to an apiary of his which was located next to a cantaloupe field. He wanted to pull some honey. No problem, we thought until we saw his colonies. Jessie doesn't use mediums or shallows for honey supers. Oh no, he likes to super his colonies with deeps. These were the heaviest supers I've ever encountered. Dan and I were struggling with one super when Jessie sprints past us with his own deep super. He picked up those supers like they weighed no more than a quart of honey and slung them onto the back of the pickup like they were pillows. Did I mention he just turned 76?

Jessie became a beekeeper when he was 10 years old. He didn't come from a long line of beekeepers like some. Neither his grandfather nor uncle showed him the ropes. No brother or father encouraged his interest. Nope, Jessie was the first McCurdy to mess with bees and it came purely by accident. One day Jessie noticed a neighbor's pine tree had bees flying in and out of a small hole. Wanting to harvest the honey, he asked permission to cut it down. It took him two weeks to finally chop down and split open that tree. He couldn't wait for that delicious, first taste of raw honey that he himself removed. However, the great expectation of his sweet reward was not granted. The honey he extracted from the tree tasted like turpentine, but he ate it anyway, all by himself. "I worked too hard to let it go to waste," Jessie explained. He made a box for his new pets which survived for years. Hence his beekeeping days began and he's been playing with them ever since. That was 66 years ago.

Jessie grew up in Albany Georgia, just off of Lonesome Road. For all you Yankees up there, that's southeast of Columbus and about half way between Atlanta and Tallahassee. It's just north of Putney and south of Leesburg. You can't miss it. However, I guarantee if you are not from South Georgia you will mispronounce the name. Trust me Albany, New York is pronounced differently than Albany, Georgia. Just ask anyone who lives there.

Throughout his youth, Jessie kept bees and made a little money here and there selling honey. But it was only a hobby and not a way of life. After high school Jessie joined the Navy. Four years later he decided to join civilian life and went to Americus to attend trade school. That's were he met his wife Hazel.

After they were married they moved to Perry, Georgia

Jessie explaining the wonders of the hive to kids and moms alike.

were they still reside today. He became an electrician by trade and started his own TV and radio repair business. Jessie and his wife Hazel had three boys and one girl, none of whom followed their daddy's passion for bees. In 1974 he went to work for Pap's Brewing Company. "It was a very nerve wracking job, but when I came home, I would go out and work the bees. Their humming would relax and calm me. I would feel closer to nature and God. It also helped me renew my faith in man kind".

Fifteen years later at the age of 58, Jessie found himself out of work due to the company downsizing. Jessie explained that it was difficult for him to find a job. "Companies didn't want to hire someone who was technically so close to retirement" he said. Jessie decided it was time to expand his honey bee hobby into a full time business. He quickly increased the number of hives and eventually maxed out at 800 colonies. He figured with all the agriculture in the area, pollination was a sure thing. He drove from field to field talking to farmers about the benefits of pollination by bees. The first crop his bees pollinated was apples. He charged only $8.00 per hive. After a few years his services were in such high demand he had to conscript the help from other beekeepers.

But making ends meet as a beekeeper wasn't easy. So, Jessie honed in on his wood working skills and began building his own equipment; something he still does today. When ever he spies a dead pine tree in the area, Jessie has it cut down, and sawn into boards. Then with his numerous saws and tools, he sculpts these boards into boxes, frames, lids, bottom boards, and whatever else comes to his mind. But not a shred of wood is ever wasted. Even the saw dust is used as mulch on their flower beds and gardens.

Pollination is still a major part of Jessie's business but more recently he has started selling specialty honeys. In the Perry area his bees collect wildflower, cantaloupe, Paulownia, and cotton. To his south they collect Tupelo, and orange blossom and to his north Sourwood.

He said "he was tired of hearing people saying all honey tastes alike." They've just never tried the different kinds" he explained.

Jessie still sells honey out of his house, but his biggest market is the Georgia National Fair. He and his wife have been a permanent fixture at the national fair for 18 years and plan on being there another 18; "if the good Lord allows", he says.

Jessie, Hazel and their son Chip are at the fair from sunup to sundown, every day for 14 days; not including the two weeks it takes to set up and tear down. They love being a part of the fair but it is hard work. Years ago, Jessie built a display (pictured) to reveal how honey comes in a variety of different colors. It is a huge crowd pleaser. He also sets out samples of wildflower, orange blossom, Tupelo and Sourwood for people to taste. "They are always amazed at the differences between them" Jessie said. Not only do they sell honey, they educate people about the little girls that produce it. There is an observation hive for people to explore, displays and brochures about Africanized bees, and CCD and even information on how to become a beekeeper. He wants the public to be aware of how important honey bees are and to understand how different our food source would be without them.

Jessie says he is nervous about the future of bees. I expressed to him how hard it must have been the year *Varroa* arrived and he explained "that was nothing compared to this year." To start, the drought kept numerous wildflowers from blooming. If crops were not irrigated, they didn't have a chance of surviving. "It was the driest year I've ever experienced" he said. Next he explained how the wildfires which burned out of control for weeks kept a blanket of smoke over much of south and central Georgia. "Some days the smoke was so thick the bees couldn't fly." Days of nectar foraging were lost due to the bee's inability to forage. Farmers started to complain about crooked vegetables and low yields. Then to top it off, he told me how the small hive beetle populations have ex-

Jessie in the field.

Jessie pointing out newly defoliated cotton fields.

ploded. Since the area around Perry has such a high volume of cantaloupe and watermelon fields, small hive beetles thrive. By the end of Summer colonies were dropping like flies all over South Georgia. Some beekeepers reported losses up to 90% from beetles. Jessie explained that this has been by far his worst year. "The mites are hard enough to deal with, but add beetles and boy it's hard to keep bees" he said.

Jessie and Hazel own and operate Ambrosia Apiaries. I've known Jessie and Hazel for almost 10 years now. They have both been extremely helpful whenever the lab or I have asked for help. They have also done a tremendous service for the beekeeping industry here in the state of Georgia. Not only with the exposure beekeeping receives at the fair (The Georgia National Fair committee expected over 450,000 visitors this year), but also their work with local schools, clubs and organizations. That's a right many folk that's been exposed to the wonders of honey bees over the years. Thank you Jessie and Hazel!

A quick note about Winter colony management in the south.

This year our southern bees have really been put through the wringer and it looks as if they're not out of the woods yet. According to meteorologists, if current predictions are correct, the southeast will experience an exceptionally dry Winter. This means bad news for our spring nectar flows. Here in Georgia, the bees are still flying on occasion which means they are consuming honey faster than they should. You will need to check your bees often to make sure they have plenty of food. If it doesn't rain, the red maple flow may be severely hampered. Pollen patties are a great remedy for poor pollen collection. I usually mix fresh pollen, brood builder (half and half) and honey to make a hamburger size patty. We've noticed some of our colonies collected plenty of goldenrod pollen, but other sites have very little. We will definitely be feeding pollen patties by the end of January. Another thing, plenty of creeks and ponds dried up this year meaning water sources are becoming scarce. In the past, we've never had to worry about this. Not any more. Make sure your bees have access to water. Even during the Winter months bees need water. Take care of those little girls, they've had it rough.

Hope your bees are merry and your Christmas white. See ya! BC

Jennifer Berry conducts honey bee research at the University of Georgia bee lab in Athens, Georgia. She is a frequent contributor to these pages.

Colony Collapse Claims Collapse

James Fischer

A recent USDA analysis of bees stored as samples in 2002 - 2007 apparently contradicts prior claims about Colony Collapse Disorder made by USDA, Columbia U, and Penn State researchers.

The new finding, to be published in the December issue of *American Bee Journal*, is that Israeli Acute Paralysis Virus (IAPV) was widespread in the U.S. several years before both the appearance of the symptoms now called "Colony Collapse Disorder" (CCD) and the first exports of Australian bees to the U.S.

The discovery that IAPV is neither new to the U.S. nor unique to colonies suffering from CCD tends to undermine multiple claims central to the prior paper "*A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder*" (*Science*, Sept 6, 2007).

First, the basic claim that the IAPV is ***"a significant marker"*** for CCD appears to be refuted. In 2002-2005, neither CCD nor any other unusual symptoms were observed, yet IAPV had infected roughly 10% of the bees sampled in those years.

Second, IAPV was claimed to have been found in bees imported from Australia, which were ***"tested as potential sources of pathogens."*** It was also noted that CCD appeared only after Australian bees were imported to the U.S. The finding of IAPV in years prior to the first bee imports indicate that Australian bees may have been wrongly accused of being "sources" of pathogens.

Finally, the claim that the work leading to the first paper was a ***"model to establish a strategy for investigating epidemics of unexplained infectious disease"*** is called into question. The work clearly suffered from the small number of samples, due to the high cost per sample for this new technology. So, claims were made and inferences were drawn beyond those firmly supported by the limited sample set. Ironically, the samples from years well before CCD appeared in the U.S. would have made excellent "controls," and were readily available.

But why didn't anyone find IAPV in 2002? Jay Evans, one of the authors of the new paper, has a good answer – ***"Viruses can be effectively invisible when tools developed for other species are used. Recent genomic advances only recently gave us a chance to screen for unknown viruses."*** So, while it was possible to find "known" viruses in years past, it wasn't possible to detect unknown ones.

The newer paper, "*Historical presence of Israeli Acute Paralysis Virus in the United States*" (Yanping Chen and Jay D. Evans, *American Bee Journal* 10/2007) makes a valiant attempt to connect their new evidence as mere clarification, rather than refutation of multiple basic points. This is accomplished by speculating about different strains of IAPV, even when the specific samples examined defied attempts to identify tangible differences.

While they said ***"IAPV isolates... can be split into four distinct clusters supported with bootstrap statistical values > 55%"***, this means that only tiny differences were found.

The observation ***"Israeli samples, including the strain first named as IAPV, are not distinct from the U.S. isolates as a group."*** concedes that there is no explanation for why the apparently identical Israeli version of IAPV killed bees and brood in mere days in Israel, but not in the U.S."

The statement ***"Genetic heterogeneity across the studied 5' region is interesting in that this region is involved in the initiation of protein translation, and genetic variability of this region may lead to different pathogenicities."*** includes three speculations, one stacked upon the other. First, the 5' region of the gene is the "prelude" section, before the gene starts doing any actual coding. Second, speculation is offered that there might be variability there without any evidence of any actual variation, and then, further speculation is offered about a more virulent virus resulting from this entirely speculative variability. All this is done to explain why IAPV in Israel kills hives all by itself, but in the U.S., is associated with or contributes to CCD.

Note that all of the above directly conflicts with the finding discussed before it, ***"Israeli samples... are not distinct from the U.S. isolates as a group,"*** illustrating the extent of the speculation.

The paper goes on to say ***"Nevertheless, we caution that much work is still needed to absolve or implicate this virus, or specific imports, in CCD."*** It would be more accurate to say that the new evidence of IAPV in healthy colonies years before CCD first appeared tends to absolve IAPV of having anything to do with CCD, and that "much work" will be required to implicate it once again.

They end up with ***"Further analyses are needed to explore the implications of these and other genome sequences for virulence traits of IAPV."*** Rather than admitting that too much speculation about too little data was done in the last paper on CCD, they will speculate their way even further out on a limb, in an attempt to explain away the new findings rather than admit to speculating the first time.

The phrases ***"Further analyses are needed"*** and ***"much work is still needed"*** are hints that they will seek additional funding to look for other reasons to not change their initial highly speculative theory about CCD in light of this new, compelling, and very surprising evidence. BC

James Fischer translates scientific jargon into plain English in a futile attempt to ignore several hundred frames that await assembly.

Expand Your Holiday Menu - With Honey, Naturally

Ann Harman

So often we get into a rut during holiday time. Turkey, ham, cranberry sauce, sweet potatoes, mince pie, turkey, ham, cranberry sauce... Stop! Let's have something different and delicious on the menus this year. You don't have to disrupt all the favorites all at one time. Just introduce something new and different to see if it will become a favorite. Some dishes will take a bit of time to prepare but if you know that in advance you can allow time for preparation. After all you are wasting time fussing with decorations, wondering what size of turkey to order, and trying to calm the kids.

We can start a dinner, or serve for lunch, some chestnut soup. Chestnuts are plentiful during he holiday months but they do not store raw very well. If placed in a ventilated plastic bag in the refrigerator, chestnuts will keep for several months.

Honey chestnut soup is very popular in Auvergne, France, where chestnut trees are in abundance.

The ingredients are simple. Chestnuts are a traditional holiday fare in many countries.

CHESTNUT SOUP

2 cups water
24 chestnuts
4 cups milk
1 cup water
1/4 cup honey
1 celery stalk, chopped
1 teaspoon salt
4 slices toasted Honey Nut Bread, whole wheat bread, or cornbread

Bring the two cups of water to a vigorous boil in a large pan. Slit the chestnuts, then drop them into the boiling water for five minutes. Pour off the water and shell the nuts. Place the nutmeats in a large bowl and crumble with a fork until the texture is like a coarse puree. In a large pan bring the milk, one cup water, honey, celery, and salt to a boil. Add the chestnuts, reduce heat, and simmer for 30 minutes. Place one slice of toasted bread into each individual serving bowl. Pour the soup and serve piping hot. Serves four.

Variation: Pour the soup into individual earthenware soup bowls, sprinkle with cheese, and place under the broiler until the cheese melts.

The Book Of Honey
Claude Fancis &
Fernande Gontier

We have to keep the traditional people happy but that is not a reason not to try a variation of the expected holiday fare. Cranberries are nutritious. In the days of the wooden ships, and especially on the whaling ships, when men were on the sea for months without fresh foods, barrels of cranberries would provide the men with a handful of red berries daily to prevent scurvy. Here is an unusual – but really delicious – variation on the traditional cranberry sauce.

Although we usually think of turkey and cranberry sauce, this sauce would be perfect with roast beef or venison. So you might consider some other meat dish this year.

CHUNKY APPLE CRANBERRY SAUCE

2 cups fresh cranberries
2 tart apples, peeled if desired, cored, cut in 1/4-inch slices
1 cup chopped onion
1/3 cup olive oil
1/3 cup honey
4 teaspoons red wine vinegar
1/4 teaspoon ground ginger
1/4 teaspoon ground cinnamon
freshly ground black pepper

In a medium saucepan stir all ingredients. Heat to a boil. Lower heat, cover and simmer 15 minutes, stirring occasionally. Cool and refrigerate.

National Honey Board

A round raisin-studded challah bread is the centerpiece of every table on Rosh Hashanah, the Jewish New Year. Extra honey goes into the bread to insure "a sweet year." The bread is served with apples and honey for dipping. Although the challah is usually round, here in this recipe it has been formed into knotted rolls.

HONEY-GLAZED CHALLAH KNOTS

2 teaspoons dry yeast
1-1/2 cups lukewarm water
2 eggs plus 1 egg yolk
1/4 cup vegetable oil
1/2 cup honey
2-1/2 teaspoons salt
3 cups whole wheat flour
4–5 cups unbleached white flour
1 cup golden raisins (optional)
1/2 cup honey for drizzling

In a large bowl, sprinkle the yeast over the lukewarm water. Set aside for five minutes until dissolved. Beat in egg, egg yolk, oil, honey and salt. Stir in whole wheat flour and beat to a thick batter. Add white flour, one cup at a time, until mixture forms a medium-soft and not-too-sticky dough. Turn onto a lightly floured surface and let rest for 10 minutes. Have an additional cup of flour nearby in a small bowl. Once dough has rested, begin kneading. If dough begins to stick to your hands, flour hands lightly. Knead for eight to 10 minutes, until dough is smooth and stretchy.

Turn dough back into the mixing bowl, cover with a damp towel or plastic bag, and let rise in a warm, draft-free place for 1-1/2 hours, or until doubled in bulk. Punch down and turn out onto a lightly floured surface. Knead for two or three minutes. At this point, depending on your schedule, you can let it rise again for another hour or you can proceed to shaping the knots.

To shape the knots, pat the dough into a large rectangle. Sprinkle the golden raisins evenly over the dough and roll up like a jellyroll. Now break off a chunk of dough about the size of a small orange. Roll and stretch this dough between your palms until it forms a rope about eight to 10 inches long. Loop the rope around itself and tie in a knot, pushing the end up through the middle of the knot. The roll will end up round, looking somewhat like a cinnamon bun. Place on parchment-lined baking sheet (maybe two). Repeat with the remaining dough. Make sure to leave room between the rolls for rising. Place rolls in a warm place and let them rise until nearly doubled, about 45 minutes.

Preheat oven to 350°F. Drizzle each roll with honey (using a squeeze bear is the easiest and best). Bake for 30 to 35 minutes, until rolls are deep golden brown. Remove to a rack to cool. Makes 10 rolls.

Honey From Flower To Table
Stephanie Rosenbaum

This next recipe is such fun and it really prolongs the holiday season. You see, you can keep the cookies on the tree until you are ready to take down the tree (now there's a good reason not to wait until Easter to take the tree down) and then everyone can eat the cookies. The reason for the sugar in the recipe is if all honey were used the cookie would be soft and difficult to use. Besides, those of you in a warm, humid area would find soggy cookies under the tree. Unless the dogs, cats and Santa's reindeer don't gobble them up first.

POLISH CHRISTMAS TREE COOKIES

1/2 cup sweet butter
1 cup sugar
1 cup honey
2 tablespoons cream
1 tablespoon cinnamon
1-1/2 teaspoon ginger
1/2 teaspoon ground cloves
1/4 teaspoon nutmeg (best if freshly grated)
grated rind of 1 lemon
3-1/2 - 4 cups flour, more if needed

Grease and flour baking sheets. Cream the butter with the sugar until light and fluffy. Add the honey, cream, spices, and blend thoroughly. Grate the lemon rind directly into the bowl so no aromatic oils are lost. Sift the flour and add it gradually to the butter mixture, beating well after each addition, until the dough is stiff enough to roll. Chill briefly. Roll out 1/8-inch thick on a floured surface and cut into desired shapes. Dough may be somewhat sticky. Transfer the cookies carefully to the baking sheet and bake at 350°F for 10 minutes, or until just beginning to brown around the edges. Cool on a rack. Store in an airtight jar.

Important: To make cookies sturdy enough to hang on the Christmas tree, add up to 1/2 cup additional flour to make a stiffer dough. Before baking make a small hole in each cookie with the tip of a paring knife. When cool, ice the cookies and decorate as desired. String yarn through the holes and tie on tree branches.

Honey Feast
Gene Opton & Nancie Hughes

With these recipes you can start some new holiday traditions. However, keep in mind each year you should really try something new that is in keeping with the traditional foods.

Oh – nearly forgot. Hang a few of those cookies by the chimney for Santa and his reindeer. BC

Ann Harman is busy cooking her holiday feast at home in Flint Hill, Virginia.

The Meeting Of The Year – ABF & AHPA Together

The 2008 National Beekeeping Conference is drawing near. The Trade Show is filling up, as are the hotels. The final touches are being put on the program. All that is needed is for you to attend.

The Conference will be at the Sacramento Doubletree Hotel in Sacramento, CA, Tuesday, Jan. 8, through Saturday, Jan. 12. It will feature the joint conventions of the American Honey Producers Association and the American Beekeeping Federation along with the annual meetings of American Bee Research Conference, the American Association of Professional Apiculturists, the Apiary Inspectors of America, and the National Honey Packers and Dealers Association.

Here are the events of the week in capsule (speakers are subject to change):

TUESDAY – JAN. 8

The Conference will open on Tuesday with committee meetings and the meeting of the Apiary Inspectors. The Symposium on Honey and Human Health is also set for Tuesday. In the evening, the CA State Beekeepers Association will host a Welcome to CA reception.

WEDNESDAY – JAN. 9

The joint ABF-AHPA convention gets its formal start on Wednesday morning with a welcome from A.G. Kawamura, CA Secretary of Food and Agriculture, and legislative reports from AHPA and ABF. Gene Brandi of CA will give an update on the controversy over bees pollinating mandarin oranges.

At noon on Wednesday, the largest beekeeping Trade Show ever in the U.S. will open with 35 bee supply dealers and manufacturers showing their wares and services.

On Wednesday afternoon, the Shared Interest Groups (SIGs) will allow those of common interests to take a closer look at their fields with sessions for Package Bee & Queen Breeders, Commercial Beekeepers (pollination and honey production), Honey Producer-Packers, and Hobbyists-Sideliners. In the evening, the American Honey Queen Program will have its queen reception.

THURSDAY – JAN. 10

The ABF Ladies Auxiliary invites all interested spouses to join them on Thursday morning for their breakfast and a program to follow, presented by the Honey Queens and contestants.

The Thursday morning General Session will be devoted to Colony Collapse Disorder with a panel of beekeepers giving their perspectives, followed by scientists working on the problem. The beekeepers will include David Mendes (FL), David Hackenberg (PA), David Ellingson (MN), Gene Brandi (CA), and Richard Adee (SD).

Reporting on their investigations into the causes of CCD will be Jeff Pettis (Beltsville Bee Lab), Diana Cox-Foster (Penn State), Dennis vanEngelsdorp (Pa. Dept. of Agriculture), and Jerry Bromenshenk (University of MT).

After lunch, Eric Mussen and Sue Cobey will report on activities at the Harry Laidlaw Bee Lab at UC-Davis. They will be followed by leaders from the USDA-ARS Honey Bee Research Labs at Baton Rouge, Beltsville, Tucson, and Weslaco.

At mid-afternoon Thursday, the scene will shift to nearby Davis, CA, and the University of CA. There will be bus tours of the university with a stop at the Laidlaw Bee Lab. The tours will conclude on the campus with a steak and chicken buffet dinner. The program there will include wine- and beer-tasting exhibiting university research.

FRIDAY – JAN. 11

On Friday the focus will be pollination and the honey boards (current and proposed). Almond grower and beekeeper Dan Cummings will provide an update from the CA Almond Board. He will also speak about Project Apis m. (PAm), a non-profit corporation that will fund and direct research to improve the health and vitality of honey bee colonies. He will be followed by a panel on Pollination 2008, led by pollination broker Joe Trayor. The panelists will be CA beekeepers Leroy Brant, Randy Oliver, Norm Cary, Ron Spears, and Ryan Coysns.

Dan Cummings

Reports from the National Honey Board and updates on the proposed Packer-Importer Board and U.S. Honey Board will conclude the morning session.

After lunch, a panel of honey packers and importers will give their views on the honey market, both domestic and international. Wisconsin beekeeper Lee Heine will be the moderator. Panelists will include Dwight Stoller (Golden Heritage Foods), Jill Clark (Dutch Gold Honey), David Allibone (Sioux Honey Assn.), Steve Smith (Miller Honey Co.), and Hans Boedeker (The Impex Group).

Three presentations finish the afternoon program. Marla Spivak will report on activities and plans at the University of MN bee research program. There will be an update from the Foundation for the Preservation of Honey Bees, including introduction of the six graduate students awarded scholarships this year. Colin Stewart of USDA-APHIS will report on the honey bee import situation.

Jack Thomas of Mann Lake Ltd.

Then, buses will depart for Woodland, CA, for a tour of the Mann Lake Ltd. CA facility and a tour and dinner at the Hedrick Ag History Center. This event is free, provided by Mann Lake Ltd. for the first 500 registrants. You must register and obtain a ticket.

SATURDAY – JAN. 12

Interactive Workshops will take up Saturday morning. Planned workshops include a mini-seminar on Nosema – Testing and Treatments, with experts from Australia and Spain. Also: Estate Planning, Coping with CCD, Employing Foreign Workers, Raising Queens in Northern Climates without Chemicals, Beeswax for Fun and Profit, a Look at Beekeeping around the World, and *Varroa* – the Search for a Silver Bullet. Another workshop will be on Honey and Health, as a mini-version of Tuesday's symposium of the same name.

Saturday afternoon business meetings and Saturday evening banquets will bring the Conference to a close.

There are several additional education activities during the week. Anyone registered for the Conference can attend these at no additional charge. On Thursday and Friday, researchers will report on their work at the American Bee Research Conference. On Friday morning, Ralph Jones of ID State University will present a separate class on Employee Motivation and Retention for those persons who are interested.

In a parallel program, Friday and Saturday will see a reprise of the Serious Sideliner Symposium that has been a feature of recent ABF conventions. Under the leadership of Larry Connor, the Symposium will focus on topics directly affecting smaller beekeepers, including those considering making the jump to commercial.

Watch for the developing details to be posted on the AHPA and ABF websites: www.americanhoneyproducers.org and www.abfnet.org. Ask to be put on the pre-conference mailing list by contacting ABF at 912.427.4233 or email: info@abfnet.org or email: brownhoneyfarms@hotmail.com.

Information is available at the same numbers on how you can promote your business or service at the Conference.

To reserve a hotel room for the Conference, call the Sacramento Doubletree Hotel at 916.929.8855 or 800.222.8733. You will likely be referred to the overflow hotel, the Sacramento Hilton, at 916.922.4700 or 800.344.4321. There will be shuttle service between the hotels, which are less than 10 minutes apart.

Discount fares for Conference travel have been arranged for Amtrak under the fare code: X04R-927. BC

Bottlebrush.

LANDSCAPE BEE TREES FOR THE SOUTHWEST

Connie Krochmal

The Southwestern region offers a unique climate. The hot, dry growing conditions can be a limiting factor when planning landscapes. However, a number of bee trees perform beautifully in the area.

Australian tea tree (*Leptospermum laevigatum*)

This tree reaches 15 to 25 feet in height with about an equal spread. Very adapted to sand, this aromatic evergreen will also grow in other soils provided they're well drained. It thrives in poor, infertile soils in full sun. Preferring acidic conditions, Australian tea tree tolerates drought and salt. This does best in zones nine through 11.

Opening from March through May, the blossoms reach nearly an inch in diameter. These can be white, pink, or red. They look like whirligigs.

A very good source of pollen, the blossoms also yield nectar. Very heavy bodied, the honey can be hard to extract from the combs. Granulation is coarse and slow. With a distinctive flavor, the honey is fairly strong, sweet, and intense. The flavor and aroma actually become stronger with age. The color depends on various factors, such as the soil and amount of the nectar flow. It ranges from very light amber to dark orange.

Catclaw (*Acacia greggii*)

Also known as devil's claw and paradise flower, this spiny tree reaches over 15 feet in height. It tends to be slow growing.

Catclaw needs full sun. It is suited to all soil types and pH levels. Preferring poor, dry soil, this tree adapts well to desert conditions. Catclaw is recommended for zones six through 11.

Opening from April until October, the yellow blossoms provide nectar and pollen. These are one of the major nectar sources in the Southwest. The honey yield can be 150 pounds or more per colony. The honey is pure white or extra light amber to light amber.

Chinese tallow tree (*Sapium sebiferum*)

Native to China and Japan, this deciduous tree reaches 25 to 35 feet tall with an almost equal spread. Chinese tallow tree features lush, shiny, light green foliage. When mature, the fruits split open to reveal the white seeds from which the plant gets another of its common names, popcorn tree. This species has a fast grow rate, but tends to be somewhat short lived.

Chinese tallow tree adapts to a wide range of soils. Tolerating poorly drained conditions and most any pH, it prefers full sun. With some tolerance to drought, this tree is pretty much unbothered by pests. Chinese tallow tree thrives in zones eight through 11.

Opening during the Spring, the yellow blossoms rarely fail to attract bees. This tree provides nectar and pollen.

Crape myrtle (*Lagerstroemia indica*)

Native to Asia, this flowering deciduous tree reaches ten to 40 feet in height with a slightly smaller spread.

Catclaw

Dwarf cultivars are available. Due to its vase shape, it can fit into narrow spaces.

This plant is well known for its showy, richly colored bark. Crape myrtle has a moderate to fast growth rate.

Preferring full sun, it needs a well drained spot. Crape myrtle is tolerant of drought and most pH levels except for extremely alkaline conditions. This shows some tolerance to salt. Pest resistant cultivars are available, including ones that resist diseases, such as Natchez and Tuskegee. This is recommended for zones seven through 10.

Opening in clusters that grow to nine inches in length, the crinkly blossoms open on new wood at the ends of the stems and from the leaf axils throughout the Spring and Summer. Depending on the variety, they may be purple, red, pink, or white.

Crape myrtles provide nectar and pollen though limited information is available on honey yield.

Honey Mesquite

Ebony blackbead
(Pithecellobium flexicaule)

Also known as Texas ebony, this very thorny tree can be evergreen to semi-evergreen. It is originally native from Florida to Texas and Mexico. A long lived tree, this member of the legume family grows 30 to 50 feet or so in height with a spread of 20 feet or more. Related species tend to be somewhat smaller.

Suited to all kinds of soil, it grows best in full sun. This adapts to a range of pH levels from slightly acidic to alkaline. It also withstands poorly drained conditions for short periods. Ebony blackbead tolerates wind and salt. This resists most pests. It is recommended for zones eight through 12.

The showy, yellowish-white blossoms open during the Summer. They resemble puffs of cotton. With a sweet scent, these are well loved by bees. This tree yields nectar and pollen. The honey of related species is light amber. The yield tends to be less than 25 pounds per colony.

Honey mesquite
(Prosopis glandulosa)

Reaching 30 feet tall with a slightly larger width, honey mesquite tends to be a long lived tree. It is also known as mesquite and honeypod. This tough, spiny tree has a slow growth rate. It tolerates drought and salt. Honey mesquite also shows resistance to pests.

This species prefers a light, shallow sandy or loamy soil in full sun. Adapted to most any pH, it does require well drained conditions. This grows well in zones six through 10.

The scented, yellow to orangish-yellow blossoms open in long clusters. These bloom from Spring throughout the Summer. Native to the Southwest, this tree is a major nectar and pollen plant in the region. There can be nearly 200 pounds of honey per colony. Granulating rapidly, this has a mild, sweet flavor. It ranges from white to light amber.

Ebony Blackbead

Jerusalem thorn
(Parkinsonia aculeata)

Reaching 15 to 25 feet in height with a comparable spread, this thorny, deciduous tree has an open, airy appearance. The narrow, fine textured foliage grows to a foot in length. This plant is named for the thorns, which grow to about an inch in length.

If needed, Jerusalem thorn can withstand heavy pruning. With a fast growth rate, it tends to be short lived.

Preferring full sun, this adaptable, rugged tree tolerates drought. It grows best in a poor, dry, sandy or gravelly soil. However, most any kind of conditions are suitable so long as the spot is well drained. Tolerant of

salt, this withstands light frost. It rarely suffers from pest problems. Jerusalem thorn is hardy to zones eight through 11.

The abundant, showy, golden yellow blossoms are marked with orange. They open in fluffy clusters in the leaf axils during the Spring and Summer. Jerusalem thorn yields both nectar and pollen. The honey is very light amber.

Jujube (*Ziziphus jujuba*)

Also known as Chinese date, this deciduous tree is native to Europe and Asia. Jujube reaches 20 to 35 feet in height with about an equal spread. The shiny green foliage grows to two inches in length. The fruits, which resemble dates, are edible.

Jujube grows well in partial shade to full sun. Adapted to most any soil type or pH, this species will tolerate poorly drained conditions. A tough plant, it tolerates extreme heat and drought. This exhibits few insect or disease problems. Jujube grows well in zones six through 11.

The yellow blossoms open during the spring. These yield nectar and pollen. Slow to granulate, the honey is amber with an exceptionally sweet flavor.

Loquat (*Eriobotrya japonica*)

Reaching 20 to 30 feet tall with a spread of 30 feet, loquat is a handsome evergreen tree. Its large, attractive foliage grows to 10 inches in length. This is grown mostly for the fragrant, creamy white blooms and the edible fruits.

This tree prefers a well drained, light loam. It adapts well to a range of different soils and pH conditions provided the spot is well drained. Preferring full sun, it tolerates drought and salt. Though loquat is prone to fire blight, it seldom suffers from other pest or disease problems.

This is recommended for zones seven through 11. Though the tree is Winter hardy, the fruit can be harmed by frosts.

The woolly blossoms, which are one-half inch in diameter, bring nectar and pollen. During the Fall and Winter, these open on panicles, up to seven inches in length. Sometimes, this tree tends to bloom heavily in alternate years. It has a moderate honey potential of 50 pounds per colony. The honey is very light amber.

Red bottlebrush (*Callistemon citrinus*)

Also known as lemon bottlebrush, this evergreen, flowering tree grows from 10 to 15 feet tall with an equal width. It is native to Australia.

Red bottlebrush prefers full sun. It has some tolerance to salt. Very adapted to drought and dry soils, this grows well in most any kind of soil or pH. It is suited to damp situations.

Red bottlebrush tends to be short lived. With a slow growth rate, this tree resists most pests. It is recommended for zones nine through 11.

This is named for the spectacular, showy, bright red flower spikes, which resemble bottle brushes. These bloom from Spring throughout the Summer. The enlarged, fluffy stamens, an inch in length, are the conspicuous part of the flower. Providing nectar and pollen, the plants usually aren't abundant enough to yield pure honey.

Silky oak (*Grevillea robusta*)

Also known as silk-oak, this ornamental tree reaches 80 to 150 feet tall with a spread of 30 feet. Silky oak is named for the fern-like, finely textured evergreen foliage.

This tree tolerates a wide range of well drained soils, including poor sandy ones. It thrives in a deep, moist soil. Silky oak doesn't like extremely alkaline or salty conditions. Preferring full sun, this Australian native can be evergreen to semi-evergreen. Rather fast growing, it has brittle branches. This tree tolerates drought, and shows some resistance to pests and diseases. It is recommended for zones nine through 11.

The main flowering period occurs during the Spring. However, silky oak blooms sporadically throughout the year. The showy, rich orange-yellow blossoms open in clusters that are up to four inches in length.

Providing lots of pollen, this is also a good nectar source. The honey is reddish-brown to dark amber. It granulates rapidly, and has a strong flavor.

Texas sophora (*Sophora affinis*)

Also known as Eve's necklace, this native tree reaches 30 to 35 feet in height with a spread of 15 to 20 feet. Its range extends from Louisiana to Oklahoma.

This deciduous tree tolerates most any pH or soil type so long as the spot is well drained. It shows resistance to drought and pests. Texas sophora thrives in full sun and partial shade. It is recommended for zones seven through nine.

In late Spring to early Summer, the scented, bicolored blossoms, which are pink and white, appear. These occur in long clusters.

Related species include Texas mountain-laurel or mescal bean (*Sophora secundiflora*). Native to the Southwest, Texas mountain-laurel is recommended for zones seven through 10. This evergreen species has purple blossoms. It grows 20 to 30 feet tall.

All of the sophoras are members of the legume family. The blossoms, which are very attractive to bees, provide nectar and pollen. Limited information is available on the honey yield.

Western soapberry (*Sapindus drummondii*)

Reaching 40 to 50 feet tall and equally wide, this is native to parts of the West from Missouri south to Mexico.

The plant is named for the small, black fruits, which are about ½ inch in diameter. These can cause a contact dermatitis in susceptible individuals.

Adapted to partial shade and full sun, western sopaberry grows well in a variety of conditions, including poor, infertile soils and most any pH. It tolerates drought, wind, and pests. This tree grows well in zones five through 11.

During the Spring, the whitish-yellow blossoms open in clusters that are nearly a foot in length. These are very showy. Bees collect nectar and pollen from the flowers.

This can yield a surplus of 25 pounds of honey per colony. It ranges in color from water white to light golden. With fine granulation, the mild aroma can increase with age. Though this usually has a pleasing flavor, this can be stronger tasting.

By choosing carefully, Southwestern beekeepers will find numerous bee trees that are suitable for landscape purposes. BC

Connie Krochmal is an award winning garden writer and a beekeeper in Black Mountain, South Carolina.

? DO YOU KNOW ?

CCD & Stress

Clarence **Collison**
Mississippi State University

Another difficult year for beekeepers is coming to a close. Problems associated with Colony Collapse Disorder (CCD) highlighted the year with many colonies dying especially in commercial operations. Weather patterns have also had a devastating effect on honey production in several areas of the United States. Extreme droughts in the southeast and west and extensive rainfall in parts of Texas and the mid-west have hampered honey production. Africanized honey bees have been found in New Orleans and have continued to spread rapidly in Florida.

Please take a few minutes and answer the following questions to determine how familiar you are with basic beekeeping knowledge.

Level 1 Beekeeping

1. ____ Winter honey bees live longer than those produced during the Summer. (True or False)
2. ____ Honey bees are warm blooded animals and because of this are able to remain active throughout the Winter. (True or False)
3. ____ *Apis mellifera* worker honey bees imprison small hive beetle adults within the hive using propolis. (True or False)
4. Name three parameters that indicate that Africanized honey bees have greater colony defense in comparison to European honey bees. (3 points)
5. A small proportion of a colony's worker population serves as guard bees; only about ____ % of the workers perform guarding activities.
   A. 10 B. 4 C. 8 D. 6 E. 2
6. ____ Africanized honey bees are more persistent and guard longer than European honey bees. (True or False)
7. If you find two *Varroa* mite fecal piles within a brood cell, what does it tell you? (1 point)
8. ____ Bees Winter better on dark combs than combs that have been recently drawn from foundation or combs that have only been used for honey storage. (True or False)
9. ____ Bee visits and pollination enhance nectar secretion. (True or False)
10. ____ Pollen supplies the honey bee with energy. (True or False)
11. ____ All flowering plants are attractive to honey bees. (True or False)

Advanced Beekeeping

12. Polandry is prominent in honey bees. Please explain what it means. (1 point)
13. ____ *Psithyrus* queens are usually found in the nests of carpenter bees. (True or False)
14. ____ Winter honey bees are characterized by consistently having low titres of juvenile hormone and nutrient-enriched hypopharyngeal glands and fat bodies. (True or False)
15. During queen rearing, the larvae are fed lavishly by the nurse bees for ____ days following grafting and they grow rapidly as the cell lengthens. The feeding by the nurse bees is completed on day ____ and the cells are sealed. The larva continues to ravenously eat the abundant supply of royal jelly until day ___ after grafting when it secretes a cocoon and turns its head down to the lower end of the cell and becomes motionless.
    A. 5 B. 2 C. 6 D. 3 E. 4
16. ____ Queen promiscuity lowers disease within honey bee colonies. (True or False)
17. ____ The area of the honey bee's body that has the largest blend or number of compounds associated with pheromones is:
    A. Mandibular Gland
    B. Sting Apparatus
    C. Dorsal Surface Of The Abdomen
    D. Nassonoff or Scent Gland
    E. Tarsal Pads
18. ____ Honey bees are more responsive to 2-heptanone than they are to isopentyl acetate. (True or False)
19. ____ The optimal temperature for the development of *Varroa* mites is between 32.5 and 33.4° C., which corresponds to the drone brood temperature of *Apis mellifera* L. (True or False)
20. ____ Israeli acute paralysis virus of honey bees has been found to be highly correlated with colony collapse disorder. (True or False)
21. ____ The age of the queen at the time of mating influences the number of spermatozoa able to migrate to the spermatheca. (True or False)
22. The pictured hive was damaged by _____. (1 point)

ANSWERS ON NEXT PAGE

?Do You Know? Answers

1. **True** Each Autumn colonies shift from short-lived workers that actively rear brood to broodless populations of long-lived Winter bees. Winter bees typically live five to six months, Summer bees live five to six weeks.
2. **False** Honey bees are cold-blooded organisms. Through colony-level homeostatic adjustments they are able to regulate temperature, which allows them to remain active throughout the Winter.
3. **True** One defense European honey bees have against the small hive beetle is to imprison adult beetles in small areas with propolis. Guard bees prevent its escape during the encapsulation process.
4. Africanized honey bee (AHB) defensive responses are more rapid, involve more bees than European honey bees (EHB).
   AHB have lower thresholds of response, react to defensive stimuli more intensively, faster and in larger numbers.
   AHB colonies sting four to 10 times more frequently than EHB.
   AHB pursue intruders with more bees than EHB.
   AHB colonies chase intruders longer distances and remain defensive longer than EHB colonies.
5. A) 10
6. **True** Africanized honey bees (AHB) are more persistent as guards. On average, AHB guarded for 4.7 days and EHB for 3.0 days.
7. That two foundress female *Varroa* mites entered the same cell and began to reproduce.
8. **True** Bees Winter best on combs that have been used for brood rearing, and avoid moving onto newly drawn, white combs.
9. **False** Nectar secretion begins about the time the flower opens, pollen ripens, and the stigma becomes receptive. When bees visit it usually results in pollination that leads to fertilization, which activates a feedback mechanism in the flower which switches off nectar secretion.
10. **False** Pollen supplies the honey bee with protein, amino acids, fats, vitamins, sterols and minerals, however, is a poor source of food energy.
11. **False** Flowers that are brightly colored, sweet smelling and offer nectar are likely to be attractive to honey bees. Some flowers will not allow honey bees access to the nectar supply, thus they can only be visited by long tongued bees, butterflies, hummingbirds etc. Other flowering plants that are not attractive to honey bees that have odors similar to carrion in order to attract flies, beetles, etc.
12. Honey bee queens normally mate with multiple drones, thus exhibiting polyandry. Estimates of the number of drones a queen mates with range from a low of five to eight to a high of 28 or more.
13. **False** *Psithyrus* queens are social parasites of bumble bee colonies. These parasitic queens enter the bumble bee nest and begin laying eggs. *Psithyrus* queens sometimes are attacked by resident bumble bee workers, but at other times they coexist peacefully in the same nest.
14. **True** Winter bees are characterized by consistently having low titres of juvenile hormone and nutrient-enriched hypopharyngeal glands and fat bodies.

15a. D) 3
15b. E) 4
15c. C) 6

16. **True** Honey bee queens mate with numerous drones to create a colony with a genetically diverse worker force. Recent research with honey bee colonies headed by queens who were artificially inseminated with either one or ten drones indicated that multiple matings improves a colony's resistance to disease. These colonies were exposed to spores of *Paenibacillus larvae*, the bacterium that causes American foulbrood. On average the colonies headed by multiple-drone inseminated queens had markedly lower disease intensity and higher colony strength at the end of the Summer relative to colonies headed by single-drone inseminated queens.
17. B) Sting Apparatus
18. **False** Alarm pheromones aid bees in mounting an effective defensive response. For European honey bees, isopentyl acetate is the principal active component of the alarm pheromone blend from the sting chamber. This compound is responsible for the majority of sting-releasing activity. The role of two-heptanone from worker mandibular glands in colony defense is less clear. This compound shows a much lower ability to attract bees from colony entrances and sting than does isopentyl acetate.
19. **True** The temperature at which *Varroa* mite development and reproduction are best vary between 32.5 and 33.4°C which correspond to bee brood temperature (32-36°C) and more exactly, to the temperature of drone brood, which is located at the periphery of the brood area.
20. **True** Israeli acute paralysis virus of bees was recently shown to be strongly correlated with colony collapse disorder (CCD). All CCD operations sampled used imported bees from Australia or were intermingled with operations that had done so. Importation of honey bees to the United States from Australia began in 2004, coinciding with early reports of unusual colony declines.
21. **True** The age of the honey bee queen influences the number of spermatozoa able to migrate to the spermatheca following mating. The number that migrate is lower in older virgin queens.
22. Woodpecker Damage

There were a possible 13 points in each test level this month. Check the table below to determine how well you did. If you scored less than six points, do not be discouraged. Keep reading and studying- you will do better in the future.

Number Of Points Correct	
13-11	Excellent
10-8	Good
7-6	Fair

Clarence Collison is a Professor of Entomology and Head of the Department of Entomology and Plant Pathology at Mississippi State University, Mississippi State, MS.

INNER ... Cont. From Pg. 10

the Germans, other beekeepers, the packers...the price of gas...anything rather than face up to what's really happening. We are losing the ability to take care of living things. Why?", he asked.

He goes on about working harder but the work being more meaningful and satisfying, not expecting others to do the work, and to learn instead of take. But it's his finish that's important here...

"The old beekeeping is dying, and a new one is struggling to be born. Are you going to the funeral, or assisting with the birth? You have to choose." And he's right....just like I said before...there's a new set of rules out there, and no matter how big or how small your operation is you better pay attention.

Then, the very next day (this was a very enlightening week, by the way), I got a call from one of the largest honey packers in the U.S. about something not at all related to beekeeping....attorneys, as it turns out. But the conversation quickly turned to the honey market, the beekeeping industry, and what's going on, and who's doing what. And, not having listened to this particular packer in a while, it was very educational, because, basically, the message I took home was...the honey industry in this country is operating by a new set of rules. Domestic honey production has little or no effect on the (industrial) honey market...a short crop in the U.S. this year isn't going to mean higher prices going to U.S. beekeepers...not any more. What moves the price of honey, for industrial sized U.S. beekeepers is the value of the dollar compared to the Euro, and the price of a barrel of oil.

The 250 million pound crops of old just aren't in the equation anymore either...this year's prediction is only 150 million pounds (we predicted 133 million...we'll see who's closest)...but 250 million pounds... not by a long shot, not any more. And probably not ever again.

And at the same time...the U.S. market is 400 million pounds every year. Where do you suppose that much extra honey is coming from? And do you suppose an amount as small as our U.S. production really has an effect on the world market?

Nope.

You see, there is a new set of rules out there.

So. The smallest of us...the two colony part-time backyard beekeeper is going to have to change how and what they do to keep bees healthy and alive and thriving. And the largest of us, the 100,000 colony megagiant Industrial Pollinator is going to have to change how and what they do to keep bees producing money. They will do things differently...due to scale and goals...but ultimately they will be doing the same things. They will both be playing by a new set of rules...and they will both be assisting with the birth of this brave new world.

So what does this mean for the rest of us?

For starters, the Brotherhood Of Better Beekeepers better be getting more respect. And more members.

Small-scale producers, like Kirk Webster, or the folks in the Pacific Northwest or in the Cold Country that we have stories on this month, or Kent Williams that we wrote about a while back or any of the other members of the Brotherhood out there? (And there are a lot of them.) Why, they'll be just fine, thank you. But they are playing by that different set of rules. New rules. Better rules. Their honey will be sought after by local customers. Their bees will be sought after by local growers who need small lots to make their small crops. And their queens will be sought after by others in the same-size category.

The industrial-sized operations, I think, are going to become even more industrialized so they can compete and keep up with the other industrialized operations they work with... megafarms, megacrops, megapollination contracts. As a result, the tools they use will be ultraefficient, ultrahuge, and ultaeconomical. Industrial Pollinators are here to stay.

And the concept of these Industrial Pollinators as honey producers is probably going to take a hit. If I were to guess, I'd say that honey is going to become, for these Industrial Pollinators, a product much like beeswax is now....almost a nuisance. Something to keep the cash flow going, but not something to count on to pay for the family farm. I'd also bet that to that producer bees will become what honey is to that industrial packer I mentioned...a commodity. Need bees? Shop the world, find the cheapest and easiest to get at the right time and phone in an order. But don't expect them to live long. Why bother treating, or caring. There's more where those came from, right?

New rules.

I'm not sure I'm going to like the Industrial part of this Brave New World, but I don't think I have much choice about accepting it. And, on reflection, I don't think Richard Taylor would consider this one of the *Joys of Beekeeping*, either.

I do like hanging out with the Brotherhood though. They seem to be getting it under control. They seem to have a handle on those rules. And I like their rules better.

But both sets of rules will be in operation. You get to choose. So come on along. The game starts now. Happy New Year!

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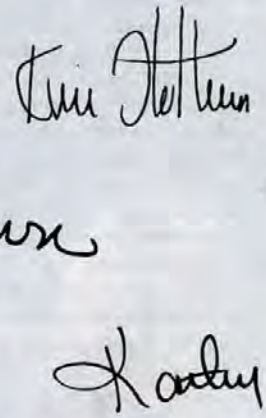
From all of us at *Bee Culture* and the A. I. Root Company, here's wishing you and yours a safe, sane and wonderful holiday season. Next year will be better, because we'll all know the rules.



GLEANINGS

DECEMBER, 2007 • ALL THE NEWS THAT FITS

HAPPY BIRTHDAY CLIFF!!

On August 22nd, Cliff Hendricks turned 100 years old. Surrounded by family and friends, Cliff was whooping it up, working on a second century.

Born in South Dakota, The family moved to a ranch in North Dakota, then off to Wisconsin to settle. In his late teens, Cliff headed to Milwaukee to make his fortune. Already a budding beekeeper, Cliff expanded, becoming a commercial beekeeper with 3000 hives, spread across the southern half of the state. He opened a honey packing plant in Milwaukee, at one time employing 60 people working three shifts. He says the war years were busy, buying honey throughout the Midwest, putting on a lot of miles. He sold his bee outfit in the 1960's, and went into commercial real estate, mining and timber out west, and other ventures. Despite his change in occupations, he continued to keep a number of beehives behind his home in Milwaukee.

Cliff is a regular fixture at the monthly meetings of the Milwaukee-Waukesha Beekeepers Association in Brookfield, Wisconsin. All of the beekeepers are talking to him at one time or another. Cliff is one of those rare individuals that have consistently been introducing people to honeybees since the 1940s and has been mentoring new honeybee students for longer than most of us have been around. He is a fountain of knowledge, and always shares his methods, secrets and ideas on beekeeping with others. Although the city of Milwaukee evicted his half a dozen beehives about three years ago, he continues to keep a small yard of bee hives outside Milwaukee, and this year managed a respectable crop of honey. He gets a little help with taking honey off these days, as he still insists on using all deep honey supers. But he is right in there extracting and doing the rest of the bee work.

Cliff is moving slower these days, but looks pretty good for an old guy. Around here we are thankful to have someone with his knowledge of honey bees, who is willing to share. Happy Birthday young fellow!

Merry Christmas

APHIS BACK TO USDA

The American Beekeeping Federation is one of 87 farm organizations that are calling for the quarantine and inspection functions now at the U.S. Department of Homeland Security (DHS) to be returned to the USDA.

In a letter to Senate Agriculture Committee Chairman Tom Harkin and ranking Republican committee member Senator Saxby Chambliss of Georgia they say the 2003 transfer of inspectors previously dedicated to agricultural threats has proven to be unsuccessful.

The National Association of State Departments of Agriculture is also a signatory.

The organizations cite a May 2006 U.S. Government Accountability Office (GAO) report documented that detections at ports of entry have dropped dramatically while the threats have increased.

"The GAO report found that only 21% of agricultural inspectors at DHS consistently received timely inspection alerts," the letter says. "In addition, a 2007 report from the Offices of Inspectors General for both DHS and USDA along with a recent investigation by the House Agriculture Committee and additional GAO reviews in 2006 and 2005 all found persistent problems."

The letter says that despite many assurances that performance will improve, the problems continue and lead the groups to conclude that improvement is not possible in the current structure.

"The threat of pests and disease is too great for us to continue to wait, particularly since the USDA program had an excellent track record," it says. "A 2004 Cornell study showed that invasive species cost U.S. agriculture $120 billion annually and continued delay in addressing this issue will only increase these costs.

"We resolutely support the DHS' statutory mission to protect us from terrorist attack and reduce our vulnerability to such threats. Restoring agricultural functions to USDA will simultaneously improve the detection of agricultural risks while permitting those charged with our overall security to focus on their mission that is of the greatest importance.

"To protect American agriculture and our natural environment, we urge you to support the transfer of the agricultural quarantine and inspection functions and restore our confidence in this important safeguard."

COMVITA IN U.S.

New Zealand honey products company Comvita Ltd. launches its Medihoney wound dressing range of products in the United States.

Comvita says its U.S. partner Derma Sciences launched the brand, at a skin and wound care symposium in Nashville, Tennessee.

Comvita has a 14% stake in publicly owned Derma Sciences.

Comvita chief executive Brett Hewlett says it is a significant moment in the company's development and paves the way for a global platform of new products based on medical honey to be launched.

GUZMAN GETS GRANT

University of Guelph researcher Ernesto Guzman receives some C$278,000 to investigate the role parasites played in the severe loss of Ontario's honeybees last winter.

About 35% of the Canadian province's bee colonies were mysteriously destroyed, costing Ontario's commercial beekeepers more than C$5.2 million and crippling the industry.

Guzman, an environmental biology professor, believes two specific parasites – *Varroa* mite and *Nosema ceranae* – are among the main culprits behind the high winter mortality rates.

Nosema ceranae was discovered in Ontario in May and has been blamed for large colony losses in Europe.

"It may be one of the main factors in Ontario's colony loss," Guzman says. "But because it's so new, the prevalence of this parasite in the province and how it affects colony mortality have never been studied."

He will use the funding from the Ontario Beekeepers Association (OBA) to verify his suspicions. The OBA received $3 million from the provincial government to fund researchers to look into the cause of the disaster and to compensate beekeepers.

The beekeeping industry hasn't suffered a loss of this magnitude in decades. In the areas that were hardest-hit including the Niagara, Ottawa, Durham and Halidmand-Norfolk areas, some beekeepers lost 100% of their colonies.

As part of the research project, he will be running a series of experiments at several apiaries across Ontario to look at the relationship of the new parasite to colony mortality. He will also be investigating where *Nosema ceranae* infection levels are higher and how the levels vary throughout the year.

"With the results of this study, we will be able to know where these parasites are in Ontario, and we'll be able to recommend measures to control them if needed and to establish preventive measures and treatment calendars."

BEEKEEPERS GO TO THE MOVIES!

My daughter Michelle thought the beekeepers should take a field trip to go see the new "Bee Movie." It turns out many others thought so too. With most of the bee chores done for the year, 28 members of the Milwaukee Waukesha Beekeepers Association gathered on a brisk fall day in New Berlin, Wisconsin. I think a couple of the beekeepers hoped they might pick up some pointers on beekeeping at the movie. As we were leaving the theater, a couple of the guys were comparing notes.

"I can't imagine a better use of time on a Sunday afternoon after the Green Bay Packer game," said Andy Hemken, President. (No word on whether they liked the movie. Ed.)

OBITUARY

Howard Foster, who spent decades building a beekeeping business in Colusa and later served as a county supervisor, died in Mount Vernon, Wash. He was 93.

The native of rural Eastern Oregon transplanted a long family tradition of bee raising to Northern California when he founded **Foster Apiaries** more than six decades ago. The firm he ran for nearly 40 years with his wife, Eva, became well-known to two generations of farmers and residents – the same people he later served during eight years on the Board of Supervisors.

Foster was born Oct. 1, 1914, in Nyssa, near the Idaho border, into the third generation of a family whose apiary trade won them the nickname "Honey Fosters." Shortly after marrying in 1935, he struck out on his own after buying 250 bee colonies from his father – the seed for his queen-bee breeding and honey-packaging business, which he and Eva moved to Colusa in 1945 and renamed Foster Apiaries.

The firm eventually supplied as many as 9,000 colonies, pollinating crops across California, the Northwest and Canada. His prominence in an important agricultural trade led him into leadership roles with the American Beekeeping Federation, for which he served as president for six years in the 1970s.

"He was a child of the Depression, so he was always real frugal – conscientious, valued a dollar, tremendous work ethic," said his son, Jerry, himself a Colusa beekeeper. "As the leader, he'd always be the first one in the shop, getting into the shop at four or five in the morning."

Surviving Foster is his second wife, Pauline Sager, whom he married after Eva's death in 1990. Other survivors include three sons, a daughter and 24 grandchildren.

NEW GENERAL MANAGER AT BRUSHY MOUNTAIN BEE FARM

Brushy Mountain Bee Farm is pleased to announce that Shane Gebauer has been hired as the General Manager, after several years of searching for the right person for this position.

Shane has been involved for more than four years with honey bees as the manager of a beekeeping supply business in New York. Shane received a Master's Degree in Ecology and Environmental Science and worked as an ecologist for the New York Natural Heritage Program.

Shane and his wife Heather started in beekeeping after buying their first house and starting a hive in their backyard. Their passion for the environment transcended to their enthusiasm for bees and led them both to work at a bee supply company for four years. During that time their commitment to honey bees and the beekeeping community deepened.

Brushy Mountain welcomes Shane and Heather to North Carolina and is looking forward to them continuing to share their enthusiasm and their knowledge to all those interested in bees.

Shane Gebaur teaching beekeepers.

HARD BALL

An Australian beekeeper has to pay A$9,500 (US$8,352) for keeping diseased bees and using equipment believed to have been stolen.

Barry Fishburn, 65, of Moss Vale in New South Wales was fined A$1,000 for possessing the stolen equipment, A$1,250 for failing to notify authorities about the disease. He was also ordered by the Moruya Magistrate's Court to pay court costs of $6,000.

The NSW Department of Primary Industries inspectors found a major outbreak of American Foulbrood in apiaries located on the South Coast.

Five apiaries belonging to Fishburn, comprising 464 beehives, were found with very high levels of American Foulbrood.

All infected hives were burnt to destroy the disease.

During the work the inspectors identified a number of beehive components branded with other beekeepers' identification numbers. Police were called in to assist with the investigation.

Magistrate Chris Bone said beehives are often placed on public lands and left unattended for long periods of time. He said those in the industry expected beekeepers to do so and trust that their hives would face interference.

Bone said the disease outbreak was a result of a serious case of neglect.

NEW FUNDING FOR BEE HEALTH

USDA announced in September that $4 million will be available in Fiscal Year 2008 for a four-year Coordinated Agricultural Project (CAP) to research ways to improve the health and protection of honey bees, which are facing serious threats that have the potential to heavily impact the nation's food supply.

"Bee populations throughout the U.S. are in serious decline," said Gale Buchanan, USDA under secretary for Research, Education and Economics. "As the threat of Colony Collapse Disorder and other bee health problems increases, it becomes more important that USDA takes the necessary steps to help protect these valuable assets."

The overall goal of the Protection of Managed Bees CAP is to improve the health of managed bee populations in agricultural systems. The research USDA is seeking to fund is expected to address genomics, breeding, pathology, immunology and applied ecology that explain the cause behind dwindling bee populations. Unique to this CAP program is that the researchers will work closely with the extension community and stakeholders to develop mitigation strategies for CCD and other significant problems that threaten the bee industry and U.S. agriculture.

Bee pollination is responsible for $15 billion in added crop value each year. CCD became a matter of concern in the winter of 2006-2007 when an estimated 25 percent of the beekeepers in the U.S. reported losses of adult bees from their hives.

CAP projects focus around the coordinated activities of individuals, institutions, states and regions to promote open communication and the exchange of information in response to emerging areas of national priority and need. The project should complement and/or link with existing programs and projects at the national level.

In Fiscal Year 2007, CSREES committed another $1.7 million to honeybees and pollinator research, while USDA's Agricultural Research Service (ARS) will spend about $7.7 million on honeybee research focused on mites, pathogen and nutrition. National program leaders at ARS and CSREES developed an Action Plan for CCD which is a long term plan for research, extension and educational activities that are recommended to address this important problem. The plan is available on the ARS Web site.

In October ARS began research on the Honey bee Health Areawide Project, which will provide robust bee colonies for early season crops such as almonds in CA or squash in FL. It will also include all major beekeeping routes, such as cherries, apples, cranberries, etc., with a focus on bee nutrition and pest resistance. The five-year project will be funded at $1 million per year, with 2007 funded at $670,000.

The USDA Cooperative State Research, Education, and Extension Service is funding the CAP project under the National Research Initiative's 2008 Request for Applications. Mary Purcell-Miramontes, national program leader for arthropod and nematode biology, developed this new project and will be coordinating this new funding opportunity.

More about the Protection of Managed Bees CAP funding opportunity can be found online. Background information about CCD and the Action Plan is available at www.ars.usda.gov/is/br/ccd.

CSREES advances knowledge for agriculture, environment, human health and well-being, and communities by supporting research, education and extension in the Land-Grant Univ. System. Visit www.csrees.usda.gov. ARS is the principal intramural scientific research agency of the USDA. Visit www.ars.usda.

BETTER INSPECTIONS

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SMALL HIVE BEETLE

A new way to lessen damage from small hive beetles in honey bee colonies has been developed by Agricultural Research Service (ARS) scientists in Gainesville, Fla. Small hive beetles (Aethina tumida) began appearing in U.S. hives during the past few years and now infest bee colonies throughout the East.

Peter Teal, leader of the Chemistry Research Unit at the ARS Center for Medical, Agricultural and Veterinary Entomology in Gainesville, and his colleagues have developed an apparatus and attractant to help beekeepers protect their honey bees. A paper on this research recently appeared in the Proceedings of the National Academy of Sciences.

Small hive beetles release a yeast that's highly alluring to fellow beetles. When the yeast grows on pollen in the hive, it attracts more beetles and sets off a cascading effect. When the population of beetles explodes, the disturbed bees leave the hive, according to Teal.

To exploit the small hive beetle's biology, Teal installed traps baited with the yeast below test hives belonging to cooperating beekeepers. The traps were separated from hives by sliding doors drilled with conical holes that allowed the beetles to enter the traps, but not to exit.

The researchers believe these traps will solve the problem for small-scale beekeepers. These small-scale bee keepers tend their hives daily and can clean their traps frequently. For large-scale beekeepers who maintain up to several thousand hives, Teal's team hopes to develop a new trap requiring less management.

If perfected, this trap could be a boon to the bee industry in Florida and other southern states which is a common overwintering destination for commercial bee colonies. A patent for the trap was filed in March 2005. Teal hopes to apply the same principle to reduce populations of *Varroa* mites, another significant pest in honey beehives.

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Pollination Word Game

You found me! Here is a list of words made from the letters in "Pollination." We have found 90. Can you think of more? While your at it, check out "Bee Kid's Corner" in the center of this magazine.

all	nap	pint	tap
an	nation	pinto	tapir
anil	nil	pit	till
ant	nip	plain	tin
opal	nit	plaint	tip
at	no	plait	to
ill	not	plan	toll
in	notion	plant	ton
inapt	oat	plantain	tonal
ion	oil	plat	too
iota	on	plato	tool
it	onion	platoon	top
loam	onto	pliant	
lap	opinion	plot	
lilt	option	pita	
lint	optional	point	
lion	pail	poll	
lip	pain	polo	
lit	paint	pool	
loop	pal	pot	
loot	pan	potion	
lop	pant	tail	
lot	pat	talipot	
lotion	pill	tall	
mail	pilot	talon	
nail	pin	tan	

Here in Colorado, the Division of Wildlife provides beekeepers with solar-powered electric fencing to keep the bad bears out of our apiaries. These fences pack a wallop. I know.

Until recently, it never occurred to me that a self-induced fence shock might save me a trip to the hospital.

One early morning last Winter, as I savored a cup of joe in my cozy Aspen bungalow, I suddenly felt flushed, weak, uneasy. At first, I thought this was a reaction to caffeine on an empty stomach.

I went up the lift with the rest of the ski patrol, but I wasn't right. Finally I said to one of the patrol paramedics, "Hey, Alex, you want to feel a strange pulse?"

After palpating my wrist, he said, in the most casual way, "Mind if I hook you up to the (heart) monitor?" Paramedics live for moments like this.

After a few minutes, he calmly announced that I was in "atrial fibrillation," or "A-fib,"which means my heart was beating erratically, and way too fast.

I couldn't comprehend this, because I am in perfect health. Always have been.

One of the ambulance paramedics peddles my honey at the hospital. I think he does it to meet chicks. At the emergency room, once word got out that I was the "bee man," doctors and nurses and lab techs came out of the woodwork to introduce themselves and tell me how much they liked my honey. I felt like a celebrity.

The ER staff gave me every cardiac test known to man. The cardiologist told me I could have a stroke if I didn't convert back to a regular rhythm, because blood could pool and clot inside my fluttering heart.

He also said, "How much did you have to drink last night?"

I said, "Three or four beers, max."

He nodded sagely. "Ah, the 'holiday heart' syndrome," he said. "Lots of people experience their first episode of A-fib on the heels of a hangover."

The doctor didn't seem to get it. "I didn't have a hangover," I said. "Coffee set this off."

He shook his head. "It wasn't the coffee. It was the alcohol," he said. "It has a delayed effect."

There's no point arguing with doctors. They know everything.

They pumped me full of medications, and the doc said, "You'll probably convert (back to a regular pulse) sometime tonight. Come back in the morning. If you're still in A-fib, we'll shock you."

Shock me? Why? I'm in perfect health, and I'm only 60.

That night at a Mexican joint in town, I kept checking my pulse. The medications had brought my pulse down to a normal rate, but it was still irregular. My heart would seem to beat normally, and I'd think I'd converted. Then it would skip a beat, or I'd suddenly get two or three right beats together. I took my pulse so many times, I forgot what a normal beat felt like.

My buddy Doug said, "Here, let me try."

I extended my hand across the restaurant table, and Doug took my wrist in his hand. Suddenly we heard a familiar voice from a few tables away. "Hey, what's going on over there?" our friend Karen wanted to know.

"Doug just proposed to me!" I exclaimed. Sometimes you have to play along.

After supper, I tried some tips from my co-workers. I sent my pulse skyrocketing as I walked briskly up the hill to my bungalow. I took an ice-cold shower. I strained like I might on the toilet. I massaged my carotid arteries. All to no avail.

My condition remained unchanged through the night. In the morning I reported back to the emergency room. By now I had another concern – my medical bill. The young man at the desk wanted to re-admit me to the ER. My insurance has a $500 co-pay for each emergency room visit. I said, "Whoa! I was just here yesterday, remember? I never really left. I only need a little shock to my heart, not a full workup."

He said, "That's not the way we do it here."

Fortunately I knew the head nurse, who can be belligerent. The cardiologist was also on my side. It still took the two of them a couple of minutes to talk sense into the young man behind the ER desk.

Next I said to the cardiologist, "How about if we skip the anesthesia?"

He looked amused. "Why would we want to do that?" he asked.

"I'm trying to keep from blowing my life savings," I said. "I don't need anesthesia. This only lasts a second, right? How much can it hurt?"

"A lot," he said. "Plus, they'd pull my license."

After the charming cardiology nurse hooked me up to an IV dripping a creamy-white knockout drug, she cooed to me as she gently stroked my arm. That's the last thing I remember.

When I awoke, she was still there. I looked at the cardiac monitor. My heartbeat was regular again. I said, "Scarlett, did I jump like a shocked CPR patient?"

"Oh, yeah!" she said brightly.

"How high?" I asked.

She laughed. "About this high," she said, holding her thumb and finger three inches apart.

Looking back, I suppose it was all worth it. I didn't have a stroke. I supposedly have my A-fib under control with medication now. I can whoop it up with Spartan moderation. I hardly remember what coffee tastes like.

But I really didn't want to get shocked at the hospital. I did everything I could think of to convert on my own, but I never thought to shock myself with my electric beeyard fence! I can't understand why it never occurred to me.

I'd have tried that in a heartbeat.

Ed Colby

A-Fib