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Birth of a bee, birth of a season. Photo by Carolyn Bye

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Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

APRIL 2008 VOLUME 136 NUMBER 4

FEATURES

DEPARTMENTS & COLUMNS

Mite Tolerant Bees

In March 2006 I had a letter in *Bee Culture* asking is it possible for a small beekeeper to produce mite tolerant bees. In June 2006 Malcolm T Sanford had an article that said yes I could produce mite tolerant bees. The rest of his article was praise for the Russian bees.

I would like to say here that I believe I have now answered my question. My bees are now through 10 Summers and thus far through 11 Winters. This without any miticides or any chemicals ever

Like almost all beekeepers in the early 1990s I lost all my bees. Each year I would buy two or three packages from a fellow beekeeper who brought bees from the southern states and each following Spring they were dead.

In 1997 I had one hive with live bees. This without any mite treatment. Through the Summer 1997 I got one swarm which I requeened from what I now called hive one and I also divided hive one. Spring 1998 all three hives were alive. I at that time decided that I may as well see how far this would go. In 1998 I built up to six and have continued to keep them without any chemicals. I believe as I stated in my letter in 2006 that all bees have some amounts of resistance to all things that come at them over time. In Mr Sanford's article he brought out that the technology to do this is very time consuming and expensive. Time consuming yes, expensive no. I am not a rich person so all I can do is keep breeding my bees. The thing to do is if they are alive in Spring raise more of them and if they are dead, rejoice. If my bees couldn't survive under my good care then the genetics just was not there and I didn't want them breeding with those that had survived. I bought one or two packages of Russian bees starting in 1999. I raised queens from these that would mate with my drones. I felt at that time all feral bees in my area were dead. The Russian bees were great, the half Russians were better

Spring of 2004 only three of 12 hives alive, plenty of honey big cluster of dead bees. On checking my records all three hives traced to the original hive one. I decided at that time I didn't want anymore Russians.

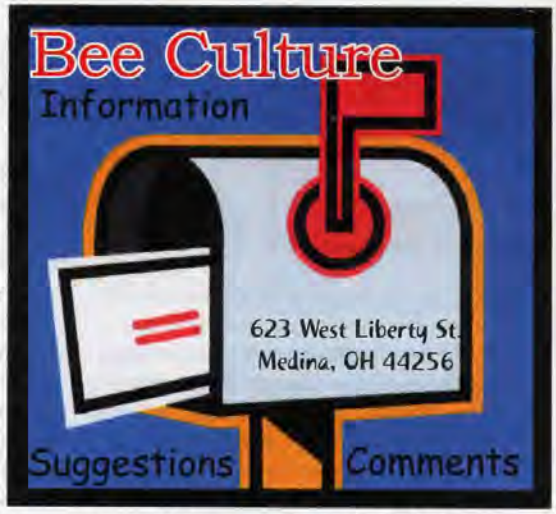
The first several years I didn't try to produce honey, just see if I could get more of them through Winter, which here in northern Indiana sometimes gets a little nasty. Then it occurred to me what if they cannot or will not produce honey

In 2004 I managed to get them up to 10 hives, my three plus two packages. Spring 2005 eight hives alive. Divided some and put on supers and my beekeeping buddy extracted 780 pounds of honey and wax. So now they produce honey what else do they need. They still carry in too much propolis, a few have been a bit too defensive but not intolerable, and they sure are lazy mornings. Sometimes there are very few flying at 7:30 on a nice Summer day.

In Spring 2007 seven hives of 11 alive. One weak, two about right and four strong. I sold a strong nuc and divided some and had 12 hives into Winter with plenty of honey and pollen for the coming Winter As of January 29, 2008 11 of them still alive.

I believe a small beekeeper can produce mite tolerant bees.

Willard Phipps
South Bend, IN



Why Feed Bees?

Last Winter I wrote a letter with the above title proclaiming the foolishness of feeding bees. The point being that by feeding we are enabling weak genetics to remain in the gene pool. Up here in N.E. Ohio we are always looking for a bee that is "Winter hardy", yet each Spring we order packages from the south and feed them in order to make it to Spring.

Throughout last season I fielded quite a number of questions and comments from the few people who know me up here. A very small number of beekeepers agreed with me. A slightly larger number stated that I had a good point, but they were not ready to make the leap. Most beekeepers just laughed and said something like "Ha! See you next Summer " Call me lazy/crazy, but I really do not want to work so hard feeding, or treating for mites, or anything...and mostly I don't.

Well, Winter came and Winter went, and in Spring it did not look good. I lost 52 of 60 hives. Boy was I ready to eat some humble pie. However after speaking with the State Apiary Inspector I found that the official figure was nearly 70% loss across Ohio. That figure should show the futility of feeding.

By using natural selection as one of many tools, the bees in our apiaries can be bred right here in Ohio and other northern states. Bees should be selected from lines, which can survive a northern Winter, without feeding. Doesn't that describe the term "Winter hardy"? How do queen breeders in the south breed for Winter hardiness anyway?

If you must feed, why not just leave the bees more honey? Could in any way feeding sugar be healthier for the bees than honey? One of the 1st things all of the beginning bee books tell us is that keeping strong hives is the best way to prevent malady. How strong are those bees, which we have to keep feeding just to survive Winter If they were strong, they would not need to be fed!

Maybe natural selection did us all a favor last Winter by leaving only the strong to survive. No, I did not feed my bees in the Winter of 06/07 Will I feed this year? Nope. And will I see you next Summer?

You Betcha!

Brian Neuman
Ravenna, OH

Get Better Queen Acceptance

What ever happened to the days when you could buy 100 queens and get 97 or more to 'take'? I have

lost tens of thousands of dollars on queens that were immediately replaced by the bees, not to mention just plain drone layers. Granted there are a few queen producers who still produce good queens, but darn few. The queens I raise for myself, I put in a five-frame nuc and she lays for at least 28 days. When I put her into a new hive the success rate is 97% but I must wait until late April and May because of inclement weather, therefore I purchase 200-400 queens the 1st of April to make early splits.

Today most queen producers use "baby nucs" that hold two cups of bees, a small feeder can and three to four tiny frames that don't equal one 6¼" frame. The queen can't lay but a 100 or so eggs before she is plugged out of space. She never gets to 'open up' as nature intended a young queen to do. After 12-18 days (depending on the producer), the queen is caught and shipped before the larva is capped. Remember, drone and worker eggs and the young larva look the same at this stage. This allows the queen producer to get paid for every 'queen' in their nucs, this is why we find drone layers with our packages and new queens.

I have talked to queen producers who will not hold queens in their nucs past 14 days because, I quote, "we would go broke." I have even offered them more money It seems all they can think about is getting one more cell through that nuc, to make more money, no matter what the cost to the beekeeper I would gladly pay $20 for a 28-day-old queen over a 17-day queen anytime.

The reason for this may be readily seen if you 'Google' the web at DAN128A, this will take you to an Australian website, just chucked full of 1999-2001 research on queen bee acceptance. Among other things they found that queens caught at 7, 14, 17, 21, 28 and 35 days had 15-day survival percentage rate ratio of 21%, 59%, 67%, 82%, 90% and 92% respectfully in the hive. "Improved survival rate with increased age at introduction were carried through for numbers of queens surviving 15 weeks after introduction with 20% @ seven days old 48% @ 14 d.o. 67% @ 17 d.o. 79% @ 28 d.o. 81% @ 35-day-old queens."

They also check 10 different pheromone levels for 7, 14, 21, 28 and 35-day-old queens. They found the highest levels to be at 21-28 days of age. The pheromone HVA went from 1.08+/ 1.07 for 14-day-old queens to 7.01+/-2.55 for 21-day-old queens. HVA is one of the main pheromones determining queen acceptance in the hive.

In my conversations with various queen producers we discussed the subject of whether or not there was any royal jelly left in the cells after the queen hatched? The replies varied from 'I don't know,' 'There isn't,' to 'I've never seen any,' 'but I know that when bees build swarm cells or supersedure cells there is royal jelly in the cells.' When asked about whether the queen larva left the supper table with a full stomach or hungry, the producer was at a loss for words.

The sad part here is that this information has been out for five years and only received two sentences in one bee industry publication. I have also had queen producers refuse to even discuss this subject, let alone ask for the website or information. Meanwhile they continue to cycle queens through as fast as possible with no apparent regard or care to these facts.

Dean Spellman
Amboy, Washington

Carnies!

My dear husband has had a fascination with bees since childhood, so when, much later in life, we stumbled upon beekeeping here in New Hampshire, it was only natural that he would want to pursue it for real.

He read voraciously, combed the catalogs and with painstaking tenderness assembled everything by hand so that our new bees would have first class accommodations.

The Italians arrived first. Popped them into their new quarters, no problem. But the carnies, they were trouble from the start. We had to travel to pick them up, and being newbies, we of course, failed to anticipate what we would need and arrived at the apiary with no equipment. Many stings later the carnies were home, in their hive and having their first meal of sugar water

After several weeks, little grey/brown mummies appeared on their doorstep. We feared the worst foulbrood but more knowledgeable folks at the bee club identified it as chalkbrood, one of the lesser evils that strike bee colonies.

All Summer the carnies lagged behind their industrious Italian neighbors. The Italians soon had two, then three, then four extra supers while the carnies took forever to require just one extra. Every time we went into the hive, they stung poor hubby again.

Then disaster struck.

On a nice sunny Sunday morning, I hitched up our riding lawn mower and set off to do the grass. Hubby told me bees do not like lawn mowers, but I figured I was on a mechanical steed and could outrun them if need be. All was well until, thud, I had grazed the corner of the stand on which the carnies' hive rested. Then a bigger thud as the entire hive came down like a set of dominos. Supers and frames strewn all over, thousands of displaced bees. I ditched and ran into the house, suited up, locked the pets in, and ran back to the scene as fast as I could. I righted everything as quickly as possible, stuffing drooling frames of honey back into the supers, thinking the whole time I was going to be stung to death given what they had done to hubby for a much lesser offense. But, you know, I got one tiny pinprick through my leather glove, just to let me know that they knew it was me that did the deed. I have since concluded that with the carnies, it must be a girl thing.

For a fleeting moment, I tried to figure out a way I would not have to tell my husband... that would be more painful than a thousand stings. But, you know, he was really great about it....guess he has a girl thing, too.

We probably have the only population of bees that was actually looking forward to a long, peaceful New England Winter Rest well, see you in the Spring!!!

Maureen Dean
www.pawtuckawaybeekeepers.org

Better Comb On Plastic Frames

Thanks to you, Mr Grant Gillard and Mr Roy Hendrickson for the February articles describing the application of additional wax to plastic foundation to increase the rate at which bees draw out plastic foundation. This was a new idea to us which we will definitely be experimenting with this coming season if sufficient colonies live through the Winter

After having drawn out thousands of commercially waxed frames of plastic foundation, we have settled on a simple arrangement of frames which we consider to result in more satisfactory drawing of foundation than any other arrangement. We simply place *one* frame of fully drawn comb, preferably dark comb with open stores, against *each* side wall and fill the remainder of the box with frames of plastic foundation.

This arrangement of frames has the following three advantages:

1 The frames of comb seem to attract the bees into the box of foundation. Admittedly, a frame of brood and stores placed near the center of a box of foundation is even more effective in attracting bees but results in the storage cells of the bait frame being built out to extreme depths. Our bees have only a slight tendency to deepen the cells on bait frames when placed against the side walls. The closer a frame of drawn comb is placed to the center of activity of the hive, the greater the tendency of our bees to extend its storage cells into the space left by a sheet of adjacent foundation. We do not use frames containing eggs and/or brood as bait frames in this situation because we suspect that the brood would not receive adequate care.

2. More perfectly constructed comb of uniform depth and shape is built. If such a box is placed immediately above a strong brood nest with no intervening queen excluder during warm weather with a good nectar flow or heavy syrup feeding, one can expect all of the foundation to be being drawn uniformly within a few days.

3. Little if any rearrangement of the frames is needed in order to get all of the frames drawn under even less than ideal conditions or if Winter arrives before comb construction is completed.

The above statements are also true for the drawing of wax foundation, whether for brood comb, extraction comb, or bulk (cut) comb honey production.

In bulk comb honey supers we use a regular extraction frame of light colored comb for the bait frame along each side wall and reduce the number of frames of comb honey foundation by one per super In order to produce frames of comb honey of uniform thickness. More space needs to be provided between the bait frame and the adjacent frame of foundation (between frame one and two) than between the uniformly spaced adjacent frames of foundation (frames two, three, four, five .). The exact frame spacing needed for a specific beekeeping operation can be determined only by trial and error Once the optimum frame spacing is determined, a handheld frame spacing comb with pointed teeth can be cut from one eighth inch thick aluminum plate using a three quarters inch diameter drill bit, jigsaw and files to smooth.

We consider the use of one extraction frame along each side wall as a bait frame in bulk comb honey supers to be a great advantage. This practice helps bait the bees into the super of foundation, eliminates the need to use a following board along each side wall, and reduces the need to rearrange the order of frames to get them all fully capped. The rearranging of nearly full bulk comb honey frames is an unacceptable practice because it almost always results in wax bridges being built between comb faces where the combs become less than a bee-space apart.

Frederick Burdell
Bidwell, OH

Drone Brood

Thank you for your report on the San Diego meeting. It was the next best thing to being there. All these years I've kept my bees in two deep hives, but this last year I've changed to three 6-5/8" boxes for several reasons.

All of my hives now consist of

nine frames of worker brood – the 10th one is drone brood. I position this frame the third one on either side, mark it with a thumb tack. And when I open a hive I lift this one out first. Very seldom do I find the queen on it, so there's little danger of mashing her By using a whole frame for drone brood the bees don't build extra drone cells so much on the worker frames. This Winter I am making inner covers with 5/16" strips of plywood on both top and bottom and two holes. One hole is for a plastic bottle feeder (I like Mott's Apple juice bottles best) and the other hole is for a queen cage – any kind. The hole is long enough to hold any cage crossways of the frames. I've had good acceptance with queens this way – I also use it to feed pollen. When not in use I cover it with a piece of paneling. With this inner cover I do not need to open the hive to feed nor do I need to open the hive to check if the queen is out or not. I can also remove the frame of drone brood and replace it with an empty one.

On one or two of my best hives I let the drones hatch out to mate with my virgin queens.

Herbert Iseler
Peck, MI

Apiary Observation Hive Notes

My February 2008 issue of *Bee Culture* arrived today, and after a quick flip through when the mail arrived, my typical reading pattern, once I get some time, starts at the back column and works towards the cover

I was interested to come to the "Observation Hive Apiary" article, having had some experience with such a display. It was especially rewarding once I focused on the first line of text and recognized my own name as the source of inspira-

Continued on Page 62

INNER COVER

Recently a very friendly lady called me asking if I had a photograph of a honey bee with stripes, and if I did, could I make the background disappear This so the bee would be by herself on the page. She needed it for an art presentation she was working on having something to do with stripes. And she was a beekeeper so stripes seemed a natural form and bees the natural bearer of those stripes. I told her, sure, we could do that but it would take a bit to get to but we'd email it to her when we were done. I wrote her email directly into an email message...in the 'Send To' box, reduced it and moved on to finish another task. Later that day Kathy said she would take care of it and to forward the email address to her

"Sure", I said, "no problem", and looked at the blue line on the bottom of my screen for the now-reduced email to send. It was gone. I had inadvertently closed it and made no other note of her email address. So I had no way of contacting that lady who was now patiently waiting for that photo. Maybe she's still waiting. I hope not.

So to that patient soul out there looking for the bee with stripes, we didn't abandon or forget you. You were, unfortunately, lost in the clutter of a too-busy computer screen that sits on a too-cluttered desk. A poor excuse I admit, but the only one I have.

It has been a busy Spring though. I've been on the road 10 of the first 13 weekends this year so far, and at least five or six days a month during the week between those weekends. For the three of us here to keep up has been a challenge...and getting ahead impossible.

So it goes.

•

One of the weekends away was the annual Spring meeting at the OSU campus in Wooster, Ohio. I've talked about this before because it deserves some attention. This was their 30th annual meeting and they have grown significantly over the years. This meeting is normally planned and run by the Tri-County beekeepers, with a lot of help from Sherry Ferrell, Jim Tew's Right Hand Assistant, and of course Jim Tew. Sherry generally tends to the basics...registration, food, rooms, taking care of speakers, taking care of Jim, and all the other planning details that make this meeting work. The Tri-County folks make it all happen with lots of bodies on hand to get the work done, and Jim...Well, Jim delegates a lot. That's OK...somebody has to do the dirty work.

This year was different though because Sherry had a last minute family emergency and couldn't be there for the meeting or the whole last week before the meeting...when the busy work hits. She had taken care of most of the tasks and was well on the way to finishing before she left though. So this year Jim couldn't delegate quite so much and really took control of the situation, finding competent people five competent people to take over Sherry's jobs so the meeting could go on. And it did go on pretty much as planned. If you've been behind the scenes of a large meeting organization you know that generally chaos reigns, but good people make sure the chaos doesn't get in the way and doesn't get shared with the folks out front.

So it goes.

A few years back they set a record attendance....711 people. This year, like the past few it's fallen off that mark a bit, and there were only about 670 beekeepers looking for relief on that cold, wintery day

This meeting was held the weekend before the Ohio Primary Bill Clinton came to town to campign, and his people wanted the spacious comfortable auditorium the bee folks were using. Instead, Bill had to use a spare and sparse gym that was empty That must have stung a bit, eh?

There were three main speakers, door prizes, vendors galore, workshops, cooking contests, good food, a beekeeping museum to tour, guessing contests and lots of beekeepers to talk with. The weather cooperated so folks could easily attend and get home, and it all seemed to go off pretty well. At the last session of the day, a general Q & A and summing up time, probably only half of the folks are still around, the rest now satiated, having heard what they wanted to hear, bought what they needed, and infused with that beekeeping fix they need to get them through to outside time again.

I've been to about 20 or so of the 30 they've had, and have watched families grow, mature and move on, small beekeeping businesses come, and some go, while others grow, and lots and lots of beekeepers who regularly attend get 20 years older in the process.

And after all those years you get to know a lot of those folks. Many have been or are still a part of the Ohio State Beekeepers, the Eastern Apicultural Society, or one of the many local county groups I often visit. So probably like you and your meetings, you get to see old friends, maybe only this one time a year anymore since many of us have shifted directions over the years, but there's this one gathering that we are all still drawn to.

Invariably the name of a beekeeper no longer here comes up...the star of some wicked story on moving bees, the greatest beekeeping mentor ever, or the generous businessman who was always willing to lend a hand or a hundred bucks for your good cause. And every year...well, every year you have to pause a moment, and you have to add more names to that long, long list of good people gone.

So it goes.

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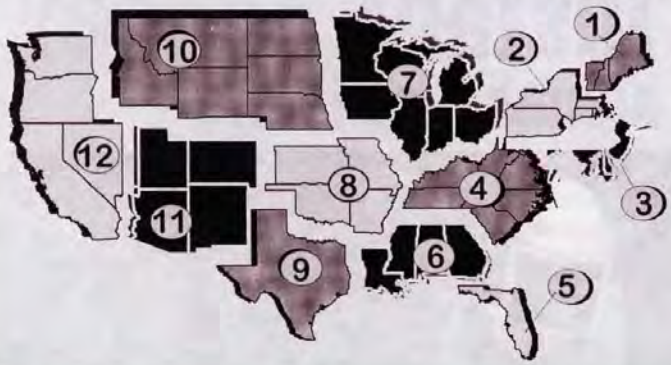
It's April now Spring, no matter how ornery or wonderful the weather today, is here. Keep your hive tool sharp and your smoker lit....this year will be better

So It Goes

APRIL – REGIONAL HONEY PRICE REPORT



Where Is Honey Sold

Below are the results of our annual Honey Sales Location survey. A quick scan shows that there are few major changes since last year.

The percent of reporters selling from home is up but the percent of their crop sold there is steady. Seasonal farm market sellers are down, as are wholesale sellers to medium sized stores.

Up worth noting are health food/organic store sellers, and with the amount of crop they move there, the actual amount of honey being sold there seems to have increased by a good margin. This is encouraging.

Internet sellers are about steady but they are selling more honey there, too. Small packer purchases are up, as are year round farm market and community farm market sales.

It looks like the trend is local honey sells. Capitalize on that trend.

% of Reporters Selling at these locations					% of Their Honey Sales at these locations					Locations Honey Sold at
2004	2005	2006	2007	2008	2004	2005	2006	2007	2008	
68	78	69	65	76	40	35	33	46	44	Home (inside or roadside stand)
17	14	13	16	16	23	41	49	26	37	Local community - sponsored farm market (i.e. Saturday & Sunday sales)
24	21	30	37	16	23	14	17	32	32	Local Farm Market business that's seasonal (Fall only, for instance)
19	18	16	18	18	32	34	17	25	39	Local Farm Market business that's year-round
5	6	18	5	10	6	23	5	44	30	Flea Market
28	41	28	24	34	28	14	20	19	20	Health Food/Organic store
15	17	10	10	13	23	9	7	14	5	Gift Store
8	11	10	5	9	9	11	14	9	12	Specialty Outlet (salons, tourist outlets, airports)
23	29	23	15	14	22	16	16	25	25	Bakeries/Food Establishments
14	11	5	4	9	18	23	5	21	19	Local High-End Retail Outlets (gourmet stores)
26	25	36	21	24	24	18	19	19	19	Local, Small 'Mom & Pop' Retail Outlets (grocery & gas)
4	6	10	2	2	22	12	21	8	13	Local, Small, Franchise Outlets (7-11, Dairy Mart, Stop & Go)
15	25	10	9	11	40	31	12	32	48	Local Small Packer or Producer/Packer
6	10	5	5	6	66	68	45	60	54	Huge Packer, they pick up
17	25	16	12	8	40	35	43	34	39	Wholesale only to medium retail outlets (small chains) you deliver
4	6	3	3	6	44	29	40	47	33	Wholesale only to larger stores, you deliver to warehouse
3	10	10	6	10	5	3	15	5	7	Breweries/Beer or Mead makers
8	11	8	7	6	31	12	15	17	29	Internet, direct retail, mail order
17	11	25	18	26	19	6	28	33	23	Work, direct retail
5	6	8	5	6	27	33	17	18	7	Local/State Fair, with club

*Total percentage of sales does not come out to 100% because of multiple outlets.

	REPORTING REGIONS												SUMMARY		History	
	1	2	3	4	5	6	7	8	9	10	11	12	Range	Avg.	Last Month	Last Year
EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS																
55 Gal. Drum, Light	1.27	1.35	1.27	1.33	0.94	1.25	1.28	1.27	1.27	1.13	0.99	1.16	0.94-1.35	1.21	1.20	1.01
55 Gal. Drum, Ambr	1.17	1.25	1.17	1.15	0.71	0.88	1.29	1.25	0.85	1.17	0.92	1.09	0.71-1.29	1.07	1.07	0.92
60# Light (retail)	106.00	122.00	132.75	109.50	110.00	120.00	112.00	113.33	121.78	121.78	113.33	127.50	106.00-132.75	117.50	112.90	109.92
60# Amber (retail)	105.00	113.33	120.00	107.50	110.00	110.00	108.20	102.50	102.50	119.07	113.20	121.75	102.50-121.75	111.09	108.94	107.53
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS																
1/2# 24/case	47.52	60.98	41.40	41.90	61.76	54.00	41.57	61.76	61.76	37.20	39.60	66.75	37.20-66.75	51.35	49.61	44.24
1# 24/case	62.33	68.53	68.40	62.75	82.80	72.60	65.91	68.80	88.00	77.76	70.00	88.00	62.33-88.00	72.99	69.71	65.94
2# 12/case	64.08	63.72	63.00	54.88	73.00	60.60	57.87	76.95	52.00	57.84	52.80	75.08	52.00-76.95	62.65	58.77	58.61
12.oz. Plas. 24/cs	58.56	63.18	49.80	59.63	54.00	60.00	52.61	56.80	64.18	48.90	56.40	62.50	48.90-64.18	57.21	54.45	54.38
5# 6/case	75.75	71.74	71.25	61.84	72.54	72.54	68.36	77.40	72.54	61.86	59.70	79.00	59.70-79.00	70.38	64.44	61.74
Quarts 12/case	88.91	100.35	112.20	86.70	78.00	84.50	86.38	84.00	102.00	115.00	81.75	105.00	78.00-115.00	93.73	86.28	85.16
Pints 12/case	55.86	49.95	66.00	57.60	56.50	45.85	49.95	49.00	61.50	51.84	46.20	58.50	45.85-66.00	54.06	60.61	57.79
RETAIL SHELF PRICES																
1/2#	2.75	2.85	2.24	3.01	3.80	2.50	2.82	2.35	2.54	2.17	2.25	3.90	2.17-3.90	2.76	2.63	2.53
12 oz. Plastic	3.25	3.76	2.83	3.49	4.15	3.30	3.22	3.78	3.52	2.99	3.11	3.95	2.83-4.15	3.44	3.41	3.24
1# Glass/Plastic	3.57	4.24	3.73	4.27	4.83	4.10	3.74	4.54	4.00	4.09	3.93	5.55	3.57-5.55	4.21	4.35	3.97
2# Glass/Plastic	7.38	7.24	6.90	6.73	7.00	6.65	6.25	8.00	6.33	6.52	6.33	9.00	6.25-9.00	7.03	7.11	6.61
Pint	6.67	7.38	6.50	5.67	5.93	5.04	5.50	5.90	6.25	7.13	6.15	7.25	5.04-7.38	6.28	6.19	6.15
Quart	12.06	8.98	11.00	9.41	8.50	9.15	10.88	10.00	11.38	14.00	8.78	13.15	8.50-14.00	10.61	10.42	9.91
5# Glass/Plastic	14.00	14.66	15.65	13.30	18.00	20.00	19.80	17.00	19.10	13.55	13.34	18.25	13.30-20.00	16.39	16.23	14.81
1# Cream	5.36	5.98	4.89	4.74	5.36	5.36	5.13	4.43	4.15	5.33	4.39	5.95	4.15-5.98	5.09	5.02	5.40
1# Cut Comb	4.50	4.60	5.19	5.23	7.49	6.25	7 10	5.00	7.49	8.00	9.00	7.83	4.50-9.00	6.47	10.25	5.80
Ross Round	6.58	3.97	4.97	4.50	6.58	4.25	6.62	5.00	6.58	6.58	6.25	7.83	3.97-7.83	5.81	5.69	5.16
Wholesale Wax (Lt)	2.00	2.48	2.49	2.49	2.15	2.25	2.25	2.50	2.00	2.08	2.63	2.68	2.00-2.68	2.33	2.27	2.26
Wholesale Wax (Dk)	1.75	1.97	2.00	2.42	1.90	1.90	1.95	2.00	2.48	2.16	2.65	2.00	1.75-2.65	2.10	1.60	1.76
Pollination Fee/Col.	60.00	79.00	60.00	42.50	88.33	35.00	48.50	60.00	88.33	40.00	105.00	115.25	35.00-115.25	68.49	74.12	62.04

Honey Production – 2007

Honey production in the U.S. during 2007 from producers with five or more colonies totaled 148 million pounds, down 4 percent from 2006, and down 15 percent from 2005. The USDA-produced chart graphically shows the incredible decline in honey production in the U.S. during the past 20 years. During 2007 there were 2.44 million colonies producing honey that belonged to operators with 5 or more colonies. This is up 2 percent over last year and 1.5 percent over 2005. The other USDA-produced graph demonstrates the decline from the high in 1989 of about 3.5 million colonies, a precipitous drop of over 30 percent. And the correlation in honey produced in the U.S. and the number of existing colonies can not be overlooked.

Many in the industry are now saying that pollination, and specifically almond pollination is what is keeping the beekeeping industry alive. If correct, then you have to wonder about these numbers. Moreover, you'd wonder if, without those bees from Australia the beekeeping industry in the U.S. wouldn't apparently be bankrupt. That appears not to be the case since there are still beekeepers willing to move west and pollinate, but at what point are all the bees in the orchards going to be from another country?

Producer stocks, that is, honey in warehouses still unsold, stood at 52.5 million pounds, down 14% from holdovers last year This is not surprising since the U.S. crop was down significantly this season, and the world crop, too, has been short. We suspect that stocks will continue to decline as world honey resources are consumed and the global wholesale price increases. Eventually these gaps will be filled either with new crop honey from below the equator, or from smaller producing countries rushing to make money. Time will tell.

Colony count analyses are always fascinating. This year's 2.442 million colony count is up a tad from last year's 2.393 million. That's right about 49,000 or 2%. With the way the data is collected, my guess is that overall colony counts haven't changed all that much in a year and this difference is sampling error more than anything. But there are some noticeable differences when you begin to look at how those counts have been rearranged in individual states. For instance, if you look at the Top 10 chart, note that their colonies have increased by 4% over last year, and that they now hold a commanding 72.4% of all the colonies in the U.S., and interestingly, produce 73.8% of the U.S. honey crop. The migration to areas that make honey from areas that don't is striking.

Of course there is other interesting data to be gleaned from this report, especially when coupled with available National Honey Board honey import and production data. The assessment data (that is, the penny a pound collected) from the NHB indicates that the U.S. *imported* 238,970,900 pounds of honey last year, and that assessments were collected on *138,881,800* pounds of domestic honey in the same year You can see the difference in NASS numbers (148,482,000 pounds domestic) and NHB numbers amount to 9.6 million pounds. This difference is historic, with NASS reporting greater honey production nearly every year compared to that reported to, and collected by the Honey Board. They have a graph on their web page that illustrates this nicely. Traditionally, this difference has been attributed to the fact that the NASS collects

Honey: Number of Colonies, Yield, Production, Stocks, Price, and Value by State and United States, 2007[1]

State	Honey Producing Colonies[2]	Yield per Colony	Production	Stocks Dec 15[3]	Average Price per Pound[4]	Value of Production[5]
	x1,000	Pounds	x1,000	Pounds	Cents	1,000 Dollars
AL	11	56	616	209	141	869
AZ	30	64	1,920	902	118	2,266
AR	28	80	2,240	717	95	2,128
CA	340	40	13,600	3,672	104	14,144
CO	33	51	1,683	892	112	1,885
FL	160	71	11,360	1,363	99	11,246
GA	60	58	3,480	522	114	3,967
HI	10	92	920	285	158	1,454
ID	92	41	3,772	1,848	108	4,074
IL	9	63	567	374	240	1,361
IN	7	51	357	100	139	496
IA	26	81	2,106	1,221	126	2,654
KS	14	40	560	196	112	627
KY	4	61	244	54	208	508
LA	29	89	2,581	413	108	2,787
ME	9	26	234	59	139	325
MI	72	64	4,608	2,350	114	5,253
MN	130	68	8,840	2,564	99	8,752
MS	15	105	1,575	189	90	1,418
MO	13	47	611	141	105	642
MT	135	68	9,180	2,203	94	8,629
NE	45	49	2,205	1,477	98	2,161
NV	10	28	280	67	360	1,008
NJ	9	57	513	185	217	1,113
NM	6	59	354	138	136	481
NY	56	57	3,192	1,947	142	4,533
NC	11	45	495	69	225	1,114
ND	420	743	1,080	9,013	922	8,594
OH	14	61	854	376	175	1,495
OR	44	43	1,892	1,041	121	2,289
PA	25	42	1,050	326	163	1,712
SD	255	52	13,260	10,608	93	12,332
TN	7	65	455	114	195	887
TX	105	82	8,610	1,550	95	8,180
UT	25	39	975	224	112	1,092
VT	5	64	320	96	126	403
VA	6	46	276	63	235	649
WA	46	44	2,024	648	125	2,530
WV	5	48	240	79	196	470
WI	60	84	5,040	3,024	115	5,796
WY	43	80	3,440	894	103	3,543
Oth Sts[6,7]	18	49	873	271	253	2,209
US[7,8]	2,442	60.8	148,482	52,484	103.2	153,233

[1]For producers with 5 or more colonies. Colonies which produced honey in more than one State were counted in each State.
[2]Honey producing colonies are the maximum number of colonies from which honey was taken during the year. It is possible to take honey from colonies which did not survive the entire year.
[3]Stocks held by producers.
[4]Average price per pound based on expanded sales.
[5]Value of production is equal to production multiplied by average price per pound.
[6]CT, DE, MD, MA, NH, OK, RI, and SC not published separately to avoid disclosing data for individual operations.
[7]Due to rounding, total colonies multiplied by total yield may not exactly equal production.
[8]Summation of States will not equal U.S. level value of production.

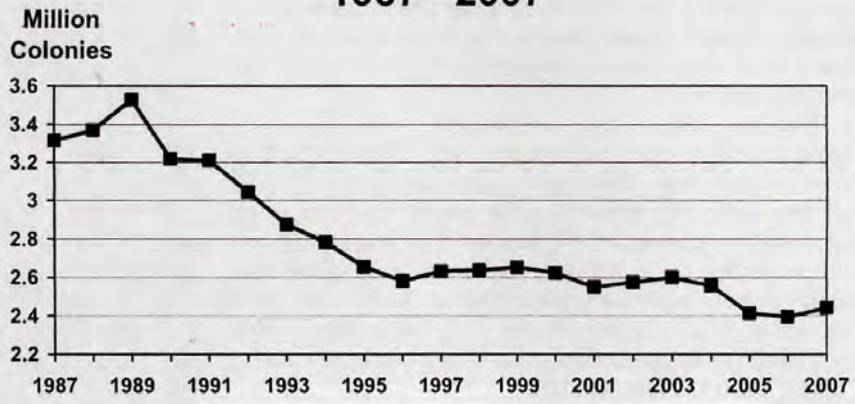
data from beekeepers with 5 or more colonies. Many of these hobby and sideline operations don't reach the NHB cutoff of 6,000 pounds produced annually so they aren't required to pay an assessment. That 9.6 million pounds then is the amount of honey produced by most of the beekeepers. It would appear that this qualifies as the 90:10 rule...about 90% of the beekeeping in the U.S. rests on the shoulders of about 10% of those who keep bees. This is, in case you haven't figured it out, pretty much how all of U.S. agriculture is structured.

Another interesting note is that the Honey Board's estimate of U.S. honey production, and the estimate we made back in our November 2006 monthly honey report are very close. Our estimate was that U.S. producers would end up making 133,712,800 pounds, only 5 million pounds, or 3.7%, off from the NHB collection data, but 15 million off from the NASS data....not a bad guess that far in advance.

The next farm bill has, if I recall, a significant amount of money allocated to APHIS to do a far more sophisticated survey of the beekeeping industry than this NASS report. I don't know why APHIS got stuck with the job since NASS does it every year, but that's not for me to worry about. The project should be carried out in the near future I understand, and when someone from APHIS knocks on your door this year, give them a hand in collecting this information... NASS never had the money to do the job needed, and, of course, nobody ever asked I guess. But now it's a necessity Give 'em a hand when they ask.

Honey Production United States 1987 - 2007

Honey Producing Colonies United States 1987 - 2007



Honey Prices 1995-2007

Cents/lb.	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
All Honey	68.5	87.8	75.7	65.5	60.1	59.7	70.4	132.7	138.7	108.5	90.4	104.2	103.2
Retail Shelf	100.0	117.3	125.7	114.7	126.6	130.4	142.2	152.5	188.5	188.7	183.3	191.0	196.1
%Difference	146%	134%	166%	175%	211%	218%	202%	115%	136%	174%	202.8%	183%	190%

Top Ten Producing States Each Year

2002			2003			2004			2005			2006			2007		
State	x1000 Col	x1000 Prod lbs	State	x1000 Col	x1000 Prod lbs	State	x1000 Col	x1000 Prod lbs	State	x1000 Col	x1000 Prod lbs	State	x1000 Col	x1000 Prod lbs	State	X1000 Col.	% Chg. From 2005	X1000 Prod lbs
ND	320	24.0	CA	480	32.1	ND	390	30.4	ND	370	33.7	ND	350	25.9	ND	420	+9	31.1
CA	470	23.5	ND	340	29.6	SD	215	22.6	CA	400	30.0	CA	380	19.8	CA	340	-11	13.6
FL	220	20.4	FL	210	14.9	FL	205	20.1	SD	220	17.4	FL	170	13.8	SD	255	+12	13.3
SD	225	11.5	SD	215	14.0	CA	390	17.6	FL	160	13.8	SD	225	10.6	FL	160	-6	11.4
MN	117	8.5	MN	120	10.0	MT	140	10.8	MN	120	8.9	MT	132	10.4	MT	135	+1	9.2
MT	134	8.4	MT	145	9.6	MN	135	10.1	MT	130	8.7	MN	125	10.0	MN	130	+4	8.8
TX	114	7.6	TX	140	9.4	TX	116	8.8	TX	84	6.0	WI	64	6.0	TX	105	+22	8.6
WI	70	6.7	WI	74	5.7	ID	100	6.3	WI	84	5.3	TX	82	5.7	ID	92	-5	3.8
NY	60	5.8	NY	67	4.8	WI	68	5.8	MI	65	4.4	ID	95	4.2	MI	72	0	4.6
MI	72	5.5	MI	65	4.8	MI	65	4.3	ID	95	3.5	MI	72	4.0	WI	60	-7	5.0
Total	1802	121.9		1856	134.7		1824	136.8		1708	131.7		1695	110.4		1769	+4	109.7
All Sts.	**2574**	**171.7**		**2590**	**181.1**		**2599**	**181.7**		**2410**	**175.0**		**2392**	**154.8**		**2442**		**148.5**
% of Tot.	**70%**	**71%**		**72%**	**74%**		**71%**	**75%**		**71%**	**75.3%**		**71%**	**71.3**		**72.4%**		**73.8**

Guest Editorial

Honey Bee Nutrition & Medication. The Consequences Of Decades of Quick Fixes.

Bruce Brown

At the National Beekeeping Conference held in Sacramento this past January one of the topics presented was "Can We Better Serve Our Bees' Nutritional Needs?" I think the bees' true nutritional needs have been overlooked for years and are long past due for closer consideration. To deal with the problems that beset the beekeeping community, obviously we need to reexamine our habits, opinions, assumptions and prejudice from the past and take a closer look at where all this is heading. Is beekeeping going to just continue going down the same road it has been going down the last few decades...and see where the chips will fall? Or is beekeeping at a point where we need to take a serious look at where things have gone astray and search for the remedy? The time of decision is now. There is no time to lose.

I think it is imperative to examine what I consider a certain "manmade belief system" that defies logic. We get these "science based" studies that become our belief system that we act on. Let me tell you about science. Today's science will become tomorrows laughter Science tries to present this stable and final picture of its findings and in the end, it is just like everything else, it's only partial, fragmented truth and it is always moving. The salesmen come in and make us think its unchangeable fact. Most "science" is driven by economic, profit driven pressure. What we call scientific truth in 2008 certainly will not be scientific truth in 2018 much less 2108. You can look backward in history and see where science has been and where it is now. Let's get to the basics and start there.

Ever since I first became involved with beekeeping in 1980, three beekeeping practices have always bothered me: 1) flagrant antibiotic use 2) pollen substitutes 3) and feeding various syrups to replace honey in the hive.

1) One subject talked about is how the bee does not seem to be as robust as it was 50 years ago. Bees seem weaker than before. Why? Perhaps some of the bee problems now manifesting are derived from many years of doing quick fixes without any regard to the long term consequences of our actions. Case in point is the routine treatments with antibiotics (Terramycin/Oxytetracycline and the new kid on the block, Tylan) that are industry standards. This has probably weakened the bees' immune system and strengthened the various organisms we are attempting to combat. When our children are healthy we don't give them antibiotics "just in case they might get sick." This would be ludicrous. And yet the "quick fix" mentality to "prevent a problem" has led to the condition of making antibiotics a constant factor in the hive. Grease patties are the most obvious, but it is true of all hives, all the time, if they have been treated, just because the powder disappears doesn't mean that the chemical residues are gone. They linger and accumulate to a much greater extent than beekeepers may be aware. They do not go away. In the honey, in the pollen, in the comb are residues.

As part of my work with bee pollen for international markets we are forced to address the chemical residue considerations that foreign countries monitor, but are ignored in the U.S. market. My research and experience has revealed the alarming extent to which U.S. hives are contaminated. Indeed, antibiotics have become so prevalent in our foods and environment that the FDA now allows them in almost all our foods. We are eating this stuff every day and don't know it. The milk you drink, the farmed shrimp, the farmed fish, the chicken, the pork, the beef and even some of the fruits are all treated with antibiotics and all have "allowable" residues in them. We knowingly give these antibiotics to the bees indiscriminately and we are getting them in us via the food supply Any wonder these viruses are able to adapt and/or mutate until nothing works against them? The consequences are staggering and they have been sold to us by "the experts." It is a decades old "quick fix" that has gone on with little questioning and I think the results are there for us all to see. The bee is less disease resistant now than ever as a result of these erroneous applications.

The pressures to survive in beekeeping are great. Many of us do things because "we are scared not to." Like in the antibiotic example above, we go to doctors and take pharmaceuticals for our children's and our own health/sickness because "we are afraid not to." Many times that kind of thinking creates the problems we are trying to avoid. One pharmaceutical leads to another pharmaceutical leads to another pharmaceutical and on and on. Sometimes it becomes a road you cannot get off of. A prescription drug treadmill. We are manipulating our health until we become totally manipulated ourselves. Same goes for the beehive. Antibiotic use has its place but, it must be in a very measured application not widespread, random use. The treatment of all colonies, even the strong ones, with antibiotics leads to a weakening of the colony Is it only slight? Or is it bigger than we think?

2) Everything about the bee is manipulated, both inside and outside the colony. Once again, the pressures of surviving in beekeeping are great. Many things are done for seemingly "practical" reasons. One of these "practical" things is feeding "pollen substitute." I guess because it is easy to get and it is relatively inexpensive. It is cheap. But is it really?

Bees in one form or another have been around for what, 80 million-100 million maybe even 200 million years? This is evidenced by the fossilized comb found in the petrified tree trunks in the Petrified Forest in Arizona. How long is 1,000,000 years much less 80 or 200 million? During this time I am sure the bees overcame countless

What Bees Need They Are Not Getting.

assaults on their survival. During this whole time period they were eating pollen. They were able to manage their survival over a long, long time. A proven track record. Now, for some reason, we think we can manipulate their diet by feeding them something they have never eaten before. Bees have never eaten soy or brewers yeast or any of the things you find in "pollen substitute." Can that possibly be the right road to go down in our infinite wisdom? Could the practicality of pollen substitute be just another weakening event like pesticides, bad air quality, mono pollen sources, chemical treatments inside the colony, etc., that allow some of these other maladies of the bee to get a foothold?

I think bees need to be fed pollen. Period. That is what bees eat. They have determined that for millions of years. We somehow have determined they can and should eat other things. How is this for logic. Feed the bees what humans eat! Pass the soy tofu please! I cannot connect the dots on that. The protein content seemed to be a focus, if not the main focus, of the pollen substitute material spoken about at the conference. Well protein is a big word. Beef, nuts, seeds, beans and many more are all protein sources of different types. There are minerals in the dirt but I do not eat dirt for minerals because that is not what humans eat for minerals. Bees do not eat soy for protein. They eat protein in the form of pollen because that is what they have done for so long. The bees body will be forced to metabolize the soy or brewers yeast somehow, someway the same way we metabolize the empty foods we eat. These things will help us gain weight too but is that the kind of weight we want to gain? Many examples show pollen substitute does stimulate the colony and the bees get bigger but I don't think bigger has anything to do with healthier and many things are stimulants for a short term but have long term negative effects, but someone much smarter than I would have to figure that one out. After all, anabolic steroids will make us bigger and improve athletic performance but do we really want to go down a road like that?

Pollen too expensive? You can't afford not to feed your bees pollen. Doing otherwise could be contributing to the overall weakness of the bee and the colony itself. That weakness could be a contributing factor for all or some of the reasons for CCD. Feeding bees the right pollen is one thing you can control. So much of beekeeping is a situation of being a victim of circumstance whether it be the weather, the pesticides, mites, beetles and so on. The emphasis for the bee research labs should be, by way of pollen, to determine what are good, nutritional bio-diverse pollen plants and what combinations work to make the best nutritional profile. Then beekeepers will have the knowledge for correct supplemental feeding. They need this information. Pollen substitutes is the wrong road.

Proper nutrition is critical to good health for all living things. The bees need proper nutrition and they are not getting it. They are weaker as a result. You must feed bees what they eat naturally.....not what we eat. This is crazy. Couple this with the bee weakened by antibiotics and maybe you can start to explain why some of the problems of enormous proportion are happening in the hive. Bees' immune systems are weakened by current beekeeping management practices. Add the stress of migration and all the other manipulations and you have a prescription for bad results. A weakened immune system for the bees or for you and me can have only one result. Sickness and eventual death.

On the opposite end of all this are the Africanized bees. They are mostly feral by nature. They are also considered to be more robust than the other breeds. They seem to have a vitality that domestic bees don't have. The Africanized bees are generally smaller than the other breeds. I guarantee they are not eating pollen substitutes, getting treated with antibiotics and being fed sugar syrups. The Africanized bees' diet is what it should be, real pollen, real nectar and honey and no medications. Treat and feed the Africanized bees the same way we treat the domesticated bees, and do it for decades, and the Africanized bees will, in time, lose their vitality too.

What affect does feeding pollen substitute have on the nutritional composition of royal jelly? If the bee is weak, and a root cause of colony weakness is lack of good nutrition, then that will have an impact on the quality of the royal jelly also. The chain reaction begins. The bees, the nurse bees, the queen bee, the eggs, the newly emerged bee all become weakened in a nutritionally defective environment. The balance of nature is fragile and trying to manipulate it can have far reaching consequences that could never have been foreseen initially. Just one event like deficient nutrition can have an effect that runs through every process in the beehive. Everything is connected.

3) On top of all that has been mentioned, last but not least, is replacing honey in the hive with various syrups. This is just another weakening event. Bees have eaten nectars and honeys for all this time and now we replace them with another form of sugar? Highly processed and refined sugars that have been heated to extremes, stripped of natural components and in no way resemble anything natural much less comparable to the substanciability of nectar or honey Why is honey considered healthy, by everyone, worldwide, and those other sugars considered bad for you? But we feed this stuff to the bees and expect good results?

Honey substitute, ie the sugar syrups, go down the same road as the pollen substitutes. Obviously, the low cost of these syrups comes into play but once again my suggestion is that bees have evolved on honey, not some contrived sugar syrup. This again could be another factor for a weaker bee. If we want to get to the bottom of some of these problems in the beehive we must "get back to the basics" and look at things from there. From the beginning. I don't think the present way of doing things is getting the job done. This present way of doing things is only 50 or so years old. The present conditions that have evolved in the hive, perhaps as a result of modern, scientific beekeeping now, may be a result of straying from the basics and accepting (without questioning) modern applications that put the bee in harms way The bee is weakened and, because of this weakening, they are getting attacked from all angles and don't have the strength to ward off challenges like the stronger, more robust bees of the less manipulated past were able to

do. The present strategy is putting out fires (or attempting to) as they arise. None of them get resolved. It seems like things just get worse. Too many problems that were not there before alongside the problems that were there before and are still here. The researchers, in my opinion, need to get back to the basics and approach the problems from there. When I get sick I fast from everything. Maybe we need a fast from all the chemical applications and the food substitutes to get a better look. Maybe it won't solve everything but maybe it will give us some understanding and insight we did not have before. In the end, some of the decisions and applications that have been made (or marketed) are short term fixes and not sustainable. Maybe it is all catching up with us now. Maybe we need a new look from the beginning.

The most disturbing thing to me is, nobody is asking these questions, at least not to the degree that they should be. At the very least, these questions need to be on the table of discussion and I was not hearing that at the meeting in Sacramento or anywhere else. If these questions are not discussed seriously and beekeeping continues to move in the same direction as it has been moving the last 50 years then I see nothing but more of the same in the future. These monster problems faced by beekeepers now are at least partially due to a "manmade belief system" that we have been bought into that will/has bankrupt the bees vitality and immune system with overmedication and bad nutrition at the same time the bee is assaulted with pesticides, stress etc. Beekeeping will not get better with the old management techniques because the old ways are a medicationally and a nutritionally weakening event. Go back to the basics, give the bees what they need. Seems pretty simple to me. It is something the beekeepers can do easily We need to raise these questions in a serious way so we can get the answers that will take beekeeping forward. It is vitally important for all of us as human beings. Maybe for reasons beyond our comprehension. BC

Thanks to Paul Younger, Patagonia Honey, for insight, improvements and suggestions.

Bruce Brown operates CC Pollen in Phoenix, Arizona.

Ma co m T Sanford

Lobbying For Bee Research

"The more specific the better."

Examples of the extreme funding challenges the beekeeping community might be faced with this year have come to my attention. First is the following from *Bee Culture*'s "Catch the Buzz" electronic newsletter· "Word has it that USDA-ARS will close the entire Weslaco Agricultural Research facility as of September 2009. This is one of several money-saving efforts USDA is considering to make up a $86 million shortfall in their budget. Closing the Weslaco facility would save about $10 13 million. Apparently the powers that be are not displeased with the Honey Bee Research program at the lab, but other research areas located there have been noted as not performing as expected. The decision is expected to be made by the end of September, 2008."[1] Fortunately, my sources indicate that this should not materially affect the honey bee research component now present in Weslaco; it will simply be moved elsewhere, perhaps to the Beltsville, MD lab.

The other consists of recently reported remarks by University of Florida President Dr Bernard Machen. He is quoted as saying, "agriculture is a dying industry in the State of Florida" and "not worthy of the investments being made by the Legislature" in the university's College of Agriculture or Institute of Food and Agricultural Sciences (IFAS). He has denied this, but it has brought a storm of protest, as reported in the February 12, 2008 edition of the Ocala Star Banner newspaper.[2]

Both of these reports have resulted in beekeepers and others "circling the wagons." Several e-mails have asked about lobbying and what "plans of action are in place." There are continuing efforts by the American Beekeeping Federation[3] and The American Honey Producers Association[4] with reference to the 2007 Farm Bill, some of which were on the table at the National Beekeeping Conference in Sacramento. An editorial in this morning's Gainesville Sun (February 14, 2008) states that the College of Agriculture (Florida's Institute of Food and Agricultural Sciences, IFAS, especially its research and extension outreach) should not be a "scared cow" when it comes to budget cutting.[5] You can bet this sort of thinking will also extend into the Federal Budgetary process and unfortunately might be lumped in with all those "high and often unwarranted farm subsidies" we keep hearing about.

Comments for the 2007 Farm Bill are now closed.[6] But the "official analysis" will no doubt provoke more opportunities for beekeepers and others the chime in. It now appears, however, that agricultural programs can't simply be lobbied for by using the "business as usual" model. It is important to isolate certain programs that are really needed to get the best possible outcomes for the beekeeping industry and provide ammunition for legislators to use with their peers.

Fortunately, the beekeeping industry can indeed point to several specific efforts in bee research at the federal level that qualify I presented some of the discussion about these in detail in the April 2007 edition of this magazine, when I discussed National Program 305. In that article subtitled "The Next Half Decade at the Bee Labs," I wrote then that a plan of action was due to be produced by June 1. It was actually published in September 4, 2007 [7]

A report based on this plan was given in Sacramento by National Program Leader, Kevin Hackett. It can be referred to whenever questions arise about bee research by USDA-ARS and used to show legislators what needs to be accomplished and what is currently being done with funds appropriated. Reporting units include, Baton Rouge LA, Weslaco TX, Beltsville, MD, Tucson, AZ, Gainesville FL, Fargo ND, Logan UT, Madison WI, and Montpellier, France.

Goal 1. Enhancing Honey Bee Health. Research required in this category includes:

1 Developing Integrated Pest Management strategies for mites. Federal approval of Hivastan® ongoing (Weslaco TX) Testing beta plan acids for Varroa control and formulating 2-heptanone (honey bee alarm pheromone component) as a miticide. Scheduled to begin in 2008 (Tucson AZ)

Control of *Varroa* using the fungi Hirsutella thompsonii and Metarhizium anisopliae. Field trials continue in Texas and Florida. In Montpellier, France experiments continue using the fungus Beauveria bassiana. Both above efforts have private enterprise partnerships.

2. Clarification of role of Varroa mite: Research is needed here to determine the relationship of mite predation to suppressed bee immunity and virus vectoring. (An overarching goal that is part of the research at most locations noted above).

3. Methods to protect hives from small hive beetle: Scientists have developed new trapping methods using a naturally-occurring yeast attractant (Gainesville FL)

4. Increasing understanding of honey bee resistance:

Demonstration of vertical and horizontal virus transmission (Beltsville MD)

Progress in defining the *Varroa* Sensitive Hygiene (VSH) trait has resulted in a reduced need for chemical treatments (Baton Rouge, LA)

Attempts to complement the VSH trait with others (brood-induced suppression of mite reproduction) to broaden the base of resistance (Baton Rouge LA)

5. Improving molecular tools: Genomic analysis must continue now that sequencing has been accomplished (Beltsville, MD and Weslaco, TX).

6. Bee cell lines need to be estab-

"It is important to isolate certain programs that we really needed to get the best outcome . . . and provide ammunition for legislators to use with their peers."

lished for further analysis (New hire requested with this specialty for Beltsville MD)

7 Disease diagnosis needs improvement in sensitivity (ongoing Beltsville, MD)

8. Development of improved honey bee management using

Australian packages (Weslaco TX and California Beekeepers Association)

Using Russian bees in 8-frame nuclei (Baton Rouge LA)

Russian and Italian bees in almonds and blueberries (Baton Rouge LA)

Using bees for sunflower seed set (Tucson AZ)

9. Determining effects of miticides and pesticides (acute and chronic effects).

10. Developing miticide resistant management programs and procedures for reducing exposure to pesticides

11 Determination of effects of nosema on colony growth.

12 Developing best management practices for migratory beekeeping.

Identifying nutritional factors affecting bee colony health (Tucson AZ)

13. Identification of signals that simulate feeding to produce queens

14. Development of nutritionally sound feeding regimes for colonies

15. Characterization of microbial associates of healthy honey bees

Goal 2: Improving Pollination of Crops. Research in this area includes:

1 Developing methods for supplementing colonies with protein. The best example of this is the so-called Tucson Bee Diet (Tucson, AZ)[8]

2. Assess effects of supplemental feeding

Relationship between artificial diet and six-frame strength criterion reveals that nuclei infected with Nosema ceranae built up for almond pollination better when fed a supplemental diet. (Weslaco, TX).

Goal 3: Developing and Using New Research Tools: Research in this area includes:

1. Development of new tools for identification purposes

2. Improved knowledge of the honey bee genome

3. Development of stress assessment techniques

4. Molecular studies on the cause and prevention of bee diseases

Genome analysis of the Paenibacillus larvae completed (Weslaco TX)

Understanding of chalkbrood increased (Weslaco TX)

5. Increased knowledge of factors leading to queen-worker development

6. Reliable long-term storage methods for bee germplasm

Efforts to preserve bee germplasm (recruiting a scientist Beltsville MD)

7 Understanding of mating and queen survival

Queen supersedure rates correlated to Varroa mite infestations (Baton Rouge LA)

Queen-specific volatile compounds indentified (Tucson AZ)

Another part of National Program 305 is that based on so-called non-Apis bees, which has two goals.

Goal 1. Managing Crop Pollination: Research in this area includes:

1 Determining effects of handling on bee nests for alfalfa leafcutting and blue orchard bees.

2. Analysis of stocking densities for alfalfa leafcutting bee.

Native pollinator (alkali bee) effective for alfalfa seed pollination (Logan UT)

3. Nesting establishment and orientation cues evaluated

Blue orchard bee incubation box shown to improve bee emergence (Logan UT)

4. Old nest components shown to attract female alfalfa leafcutting bees and blue orchard bees (Logan UT)

5. Determination of role of chemical cues in parasite attraction to nests

6. Investigation of the condition known as "pollen balls"

7 Improved understanding of Ascosphaera fungi

New genes sequenced for Ascosphaera (Logan UT)

8. Determining modes of disease transmission for Ascosphaera

9. Development of molecular tools for studying Ascosphaera

Development of tools to study immune response of bees (Logan UT)

10. Identifying methods for controlling chalkbrood

Testing of ozone as fumigant (Logan UT)

11 Management systems for mass production of blue orchard bee

Patent filed for incubation system to hasten emergence of blue orchard bees (Logan UT)

12. Identification of bumble bee species

Research initiated to identify bumble bee species for artificial propagation (Logan UT)

13. Evaluation of parasites and diseases in bumble bees

Preservation efforts to improve understanding of queen behavior (Logan UT)

Goal 2: Enhancing Bee Biodiversity and Contribution to Land Conservation: Research in this area includes:

1 Assessment of bee diversit

Bee diversity in public rangelands and national parks (Madison WI)

2. Assessment of bumble bee populations

Development of bumble bee genetic markers to evaluate population health (Logan UT)

3. Revision of classification of the bee family Megachilidae

4. New identification techniques for bees (imaging systems; interactive keys)

5. Maintenance of the U.S. National Pollinating Insects Collection and database[9]

Guide to bee identification (Logan UT)

6. Identification of suitable forbs and pollination strategies to restore wild lands

Pollinators identified for restoration of the nation's rangelands (Logan UT)

There is a lot here for anyone to digest. I have provided this outline in some detail, more than any legislator need be shown, so that those requesting support of the bee labs from law makers can get an idea of the entire effort, and will have as much information to use as may apply in any situation. It implies that those using the above outline will be necessarily employing only as much as needed to get certain points across.

In pursuing their goals, those lobbying for bee research must also develop a balance when thinking about efforts between study associated with honey bees (Apis) and native bees non-Apis. Both efforts have some common themes that can be identified, which would benefit both types of insects and their managers.

An important caveat too is that beekeepers can point to a series of research efforts they themselves are supporting. CCD study for example is being funded by a wide range of entities, including beekeeping associations and departments of agriculture[10] And the Project Apis m[11] reveals that beekeepers are helping themselves by funding vital research activities in cooperation with almond growers.

> "Beekeepers must also point to the research efforts they are funding like Project Apis m, the Federation's program, work within many State Associations and outside groups like The Almond Board."

Finally, it must be mentioned that those lobbying should not "go it alone." There's too much at stake. The question above, what "plans of action are in place?" is a good one, and it would do well to take it to heart and either develop such a plan or find a program already in place. Other organizations besides beekeeping ones might also be recruited (vegetable and fruit associations) or in some cases developed, such as Project Apis m. In Florida, the Farm Bureau is the "go to" organization for those wishing to educate the University of Florida president. The organization has several advisory committees at the national level, including I believe one on beekeeping[12]. BC

Dr. Sanford is a former Extension Specialist in apiculture at the University of Florida.

References: (All URLs accessed February 17 2008)

1. http://home.ezezine.com/1636/1636-2008.02.07.15.25.archive.html
2. http://www.ocala.com/article/20080212/NEWS/802120338/1368/google-sitemapnews
3. http://www.abfnet.org
4. http://www.americanhoneyproducers.org/
5. http://www.gainesvillesun.com/article/20080214/OPINION01/802140301/-1/opinion01
6. http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1UH?navid=FARM_BILL_COMM
7 http://www.ars.usda.gov/SP2UserFiles/Program/305/NP305ActionPlan-Final09-04.pdf
8. http://www.reuters.com/article/pressRelease/idUS109134+17-Dec-2007+PRN20071217
9. http://www.ars.usda.gov/is/np/systematics/pollinating.htm
10. http://maarec.cas.psu.edu/ColonyCollapseDisorderInfo.html#reportsResearch
11. http://www.projectapism.org/?action=research
12. http://www.fb.org/index.php

Out Breed The Mites

USING NUCS

Overwinter Success

Me Disselkoen

It all has to do with <u>when</u> you start your nucs – Summer, <u>not</u> Spring

Introduction and background

Over the past 15 years, beekeeping has changed dramatically due to the introduction of the *Varroa* and tracheal mites. When the mites were identified about 15 years ago, the losses to northern, overwintered hives ran from 30–70%. Already, within the past 10 years, the number of hives in the U.S. has decreased to just half of what it was. We now have a serious bee shortage and the scientific community has not yet been able to solve the mite problem.

When I realized that our current management techniques and ways of thinking about beekeeping were failing to address the mite problem, I decided to step back and after reading I found myself going back to the Masters for answers, Rev L. L. Langstroth, G. M. Doolittle, and Dr C. C. Miller They gave us the moveable frame hive, modern methods of grafting queen cells, meticulously-designed beekeeping equipment, and the fundamentals of modern beekeeping.

For 10 years now, I have been studying and experimenting with G. M. Doolittle's well-documented beekeeping methods as found in his book entitled, *A Year's Work In An Out-Apiary*, which was originally published in 1908 by the A. I. Root Company of Medina, Ohio. It was reprinted in 2005 by Dr Lawrence J. Connor and is currently available from Wicwas Press. Doolittle's methods have stood the test of time. Following his lead has enabled me to recover my hives and increase my bee populations. Here I share with you my findings on how to:

- Overwinter honey bee nucs without drugs by outbreeding mites
- Avoid the expense and hassle of genetic determinism
- Earn $900/hive by selling bees
- Raise strong hives for honey production and pollination
- Produce more than enough increase to recover any losses
- Provide safety valves for overwintering honey bee nucs

Overwinter honeybee nucs without drugs by outbreeding mites

The solution is simple for overwintering nucs. The honey bee can outbreed the mite. We see this every year when mite-infested, overwintered bees build up in the spring in response to the day length and the swarming season. If left alone, the mites will eventually kill the colony (in some cases within one year). The reason for this is that a honey bee queen mated before the *turn of days, or June 21*, slows down her egg laying after the turn of days (June 21) at which point the mites start outbreeding the bees. By Fall or Winter the hives will fail. This is a normal, biological relationship between these two organisms that is difficult to overcome without intervention. You can stimulate a queen by feeding the hive sugar syrup in the Fall but not long enough or at the level to be able to outbreed the mite. ***The only way to outbreed the mite in the Fall is to introduce a queen cell at the end of July as that queen will not slow down her egg laying but instead will act like a Spring queen***. I reasoned that if we can find a way to continually outbreed the mite we can overwinter our bees without drugs but it may require rethinking our procedures and management.

It has become clear to me that rather than focusing on why 70% of the hives died in the Fall and Winter, it would be more useful to understand why 30% survived. Here is where Doolittle's work comes into play He observed that when a hive senses that the queen is failing, the colony will supersede that queen. This usually occurs in July A newly-mated queen at this time will perform as does a Spring queen and lays eggs so rapidly that it quickly outbreeds the mite well into the Fall. The outbreeding of the mite will occur even more rapidly if there is a week of broodlessness which breaks the mites' breeding cycle.

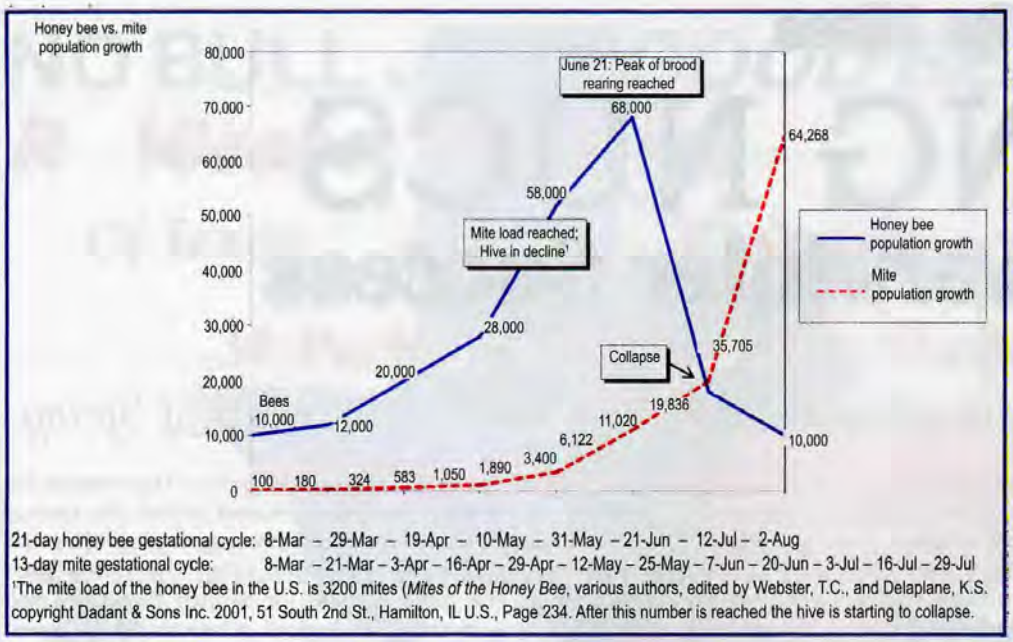
Doolittle advocated Fall requeening (meaning after the turn of days) and this is the way we can save our hives without any drugs at all. In his book, Doolittle states,

"I have made such with perfect success as late as September first, using six combs of brood and four of honey."

These single hives were then overwintered in a cellar It is important to remember that Doolittle lived near Syracuse, NY which is located on the 43rd parallel (the same parallel on which I reside and which has made it ideal for me to test his methods). In chapter seven he requeens failing queens or ones that he doesn't think will make the Winter Quote,

"As this is the season of the year when the bees do most their superseding of queens (it seems so natural to them), my loss in using this plan will not average more than one queen cell out of 20 given."

If you read between the lines here, Doolittle is



***Graph 1**. Hypothetical projection of honey bee and mite reproduction starting with 100 mites and 10,000 bees on March 1 in the Grand Rapids, MI area (43rd parallel). Honey bees' mite rate increases 1.8 times per 21 day brood cycle versus* Varroa *mites' rate increases 1.8 times per 13 day cycle.*

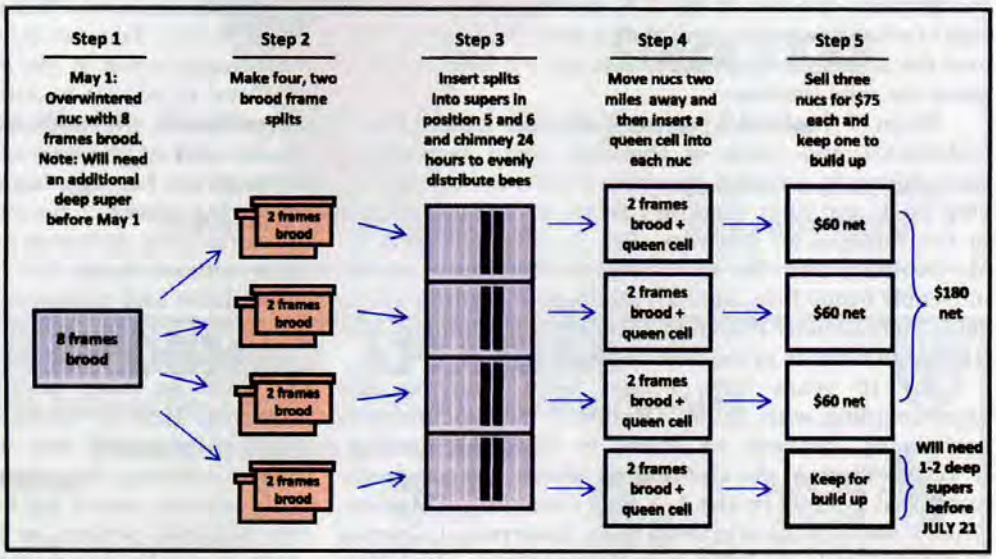


***Figure 1**. Sell three nucs at $75/each to make $60 net profit/each and keep one for build up.*

implying that if you make a two brood frame split on July 24 and give them a cell she will be mated and laying on August 1 Then by September 1 she should be well on her way to six frames of brood. What they don't have is the four frames of honey needed for overwintering in the cellar We would then have to give them the four frames of honey or feed them heavily throughout September as you want all feeding to end by November 1 (this is so they can process the syrup). You need 63 days or three brood cycles from August 1 through September 30 to have a population large enough to overwinter Remember that a young, newly-mated queen will not slow down that late in the year but will act just like a spring and swarm queen. Therefore, she will outbreed the mite and you will go into Winter with a hive of young, strong bees.

Avoid the expense and hassle of genetic determinism

I have been a beekeeper for over 35 years and have operated 450 colonies that were part of a migratory operation. I now operate enough hives to continue my research and stay current in the industry In years past it was normal to have only a 10% Winter loss. This was before we began to requeen our hives annually Fifteen years ago, the honey bee had all the genetics to overwinter successfully The mites have not caused the honey bee to lose its genetic ability to overwinter and never will. There is no reason to spend time and money chasing down or importing bees for their genetic ability to overwinter I have nothing against different strains of bees but it is just not necessary The best bee is the bee that can overwinter in your area and build up in the Spring.

When I started to lose my hives to mites, it was a logical assumption that the hives that overwintered successfully were genetically superior to the hives that did not. I started to raise queens from these successfully overwintered hives but to no avail, because they died just like the others. Thanks to Doolittle, I now know that hives overwinter successfully *by superseding their queens in July*, not by being genetically superior

Several years ago I asked a respected authority whether Africanized bees have *Varroa* mites. The answer was yes. The Africanized bee has a smaller cell size and a shorter gestation period and it is assumed that this is why they can survive the mites. While this is partially

true, it still remains that they have the mites and the mites will eventually kill the colony One thing that isn't mentioned much because it is considered a negative genetic trait is that Africanized bees swarm continuously Beekeepers have always sought to avoid and reduce swarming but for the Africanized honey bee, swarming is fundamental to its survival. Swarming breaks the mites' breeding cycle and the young, newly-mated Africanized queens lay eggs rapidly enough to outbreed the mite. We can create the same scenario by doing the same thing with our stock up too every 13-15 weeks and then our queens can also outbreed the mites.

Mel Disselkoen, the author, with his candy board.

Earn $900/hive by selling bees

For income, I don't use my bees to produce honey or pollinate but, instead, I sell the bees themselves in the form of nucs. By the first of May in the Grand Rapids, MI area my overwintered hives will each have eight frames of brood. I then make four, two-brood frame splits and give them a new queen. I can sell three of these nucs for $75, or $60 net profit and keep the fourth one to build up and be my parent hive the next Spring to do all over again. So I can make $180 net profit on what was just a nuc back in the Fall and which has overwintered and grown into a hive by May 1 (see Figure 1).

My other option is to not sell my nucs in the Spring and, instead, build them up until the third week of July (July 21-24). By that time, each nuc will have grown into a hive with eight frames of brood. I can split each of these hives into four nucs again, as I did in May, so that I end up with a total of 16 nucs. I can again sell 15 of these nucs for $75 each to make $60 net profit on each nuc for a total of $1,125 gross or $900 net profit (see Figure 2).

Again, you have the option to build up these 16 nucs instead of selling them. After overwintering, you would split them into 64 nucs on May 1, and then sell 60 of them for a total net profit of $3,600 and still be left with four nucs as we had the year before to start all over again (see Figure 3). Remember, this $3,600 in income has been generated from one hive in one fiscal year

Obviously, you would keep for build up however many nucs you need to meet whatever intended financial goal you have for that year There is a lot of flexibility in this system. If you don't want to produce that many nucs, you can always unite them into strong units to produce honey or to pollinate. It is also important to keep in mind that this is how the system works in theory and does not take into account mismating, weather, predators, or human error that can affect final results. But even if these events resulted in producing even half as many nucs as projected, you can see the advantage of this system.

Raise strong hives for honey production and pollination

If you run for honey production or pollination, the first of May in Michigan you would remove the queen and two brood frames with adhering bees plus two brood frame shakes. That would leave six or seven brood combs on the original location. You would then allow this hive to rear its own queen. Without a laying queen, all the honey will be stored in the brood nest. When the young queen mates and starts laying, it is done with such vigor that it will explode in population. At that time, you would put on a queen excluder and two deep supers. Bees will not tolerate honey in their brood nest so they will turn that honey into brood or put it above

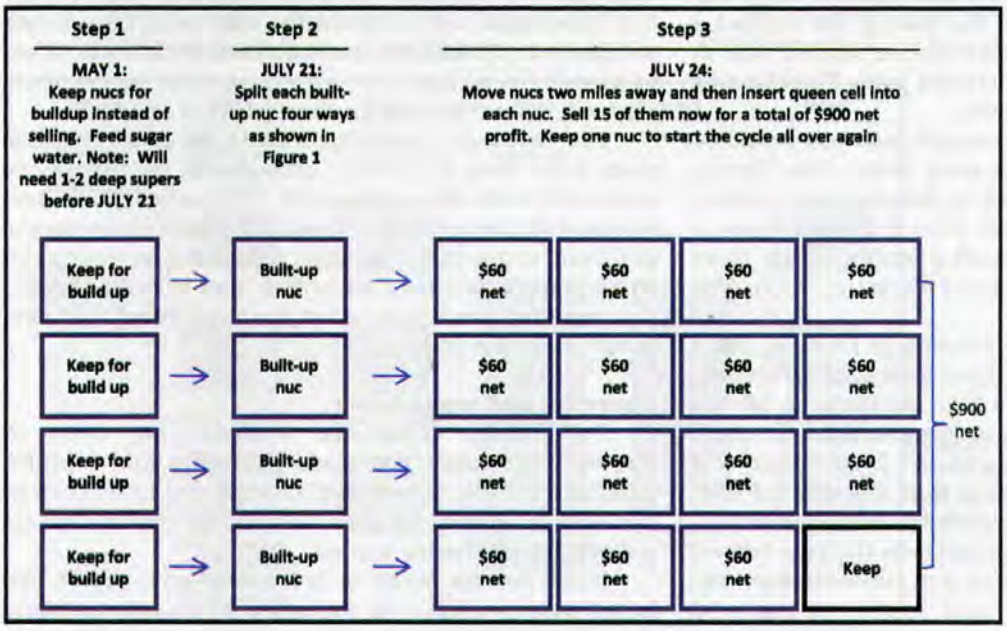


Figure 2: *Build up your May nucs to split and sell in July for $900 net profit.*

The first season for the wind shields.

the excluder into the supers. You should have two deep supers of honey by the 20th of July For my purposes I use this honey to help feed the nucs I will create July 21-24 from the original queen and two brood combs that I took in May which, by this time, have grown into eight brood frames. As for the hive being used for honey or pollination, you can also split it into nucs or just let it produce as much honey as possible. In Michigan we have a great Star Thistle flow of water-white honey the first part of August. This hive will fade as the queen was mated *before the turn of days (June 21)* and the mites are now outbreeding the bees but you will have the four nucs that you made from the original queen in the Spring that you can overwinter for r replacement (see Figure 4).

Produce more than enough increase to recover any losses

I have been working on overwintering nucs for several years with beekeepers that the editor of this magazine calls the "brethren." Two Summers ago, Chris Barnes, the manager of Dadants in Albion, MI, wanted to learn more about the system so I drove to Albion to show him first hand. That July we made four splits from each full-strength hive. Half of these nucs overwintered and built up to give us strong hives in the Spring. So we had a 100% gain from the original hive that we started with in July but a 50% loss in the intended gain. Therefore we had a 50% loss but gained 100%.

You may say this is good enough, and you would be right, but we could have done even better That Spring we had a real late snow (April 9), around nine inches, and some of the nucs starved. After that experience, I began to look for a way to install a feeding safety valve within the hive that would prevent starvation caused by surprise late Winters.

In the Spring (2007) bee meeting at Lansing, MI, I was asked to speak on this subject with a lot of interest. Shortly thereafter, beekeepers from the Holland, MI bee club asked me to come to their meeting and give the same talk. It was at this meeting that I met Lynn Quinn and Bob Ramsey, novice beekeepers that had started four hives that Spring and were interested in raising chemical-free bees. Just as I had done with Chris the year before, I drove to their homes in Allegan and Bloomingdale, MI, to show them the system firsthand. In July, we made 16 nucs out of their four hives. Meanwhile, I was creating my own nucs again, as was Chris Barnes, who felt that he understood the system enough by this time to be able to do it on his own. I had contracted queen cells for our nucs from Ron Brooks in Indiana, stinger0001@yahoo.com, and on July 22, we picked up the cells and inserted them into the nucs. Out of Lynn and Bob's 16 nucs, two nucs failed due to mismating so they ended up with a total of 14 nucs.

Provide safety valves for overwintering honey bee nucs

By the time Winter rolled around, I had found a source for a feeding safety valve in the form of a candy board that I felt would help our nucs overwinter I believe that had we had these candy boards last Winter, we would have saved many hives.

I designed and then contracted special, one-inch-deep candy boards made by Danny Slabaugh of Nappanee, Indiana, dslabaugh@skyenet.net, to place on top of the nucs. To purchase the candy boards, I used the money saved from not having to purchase pharmaceuticals. I drilled a 3/8 inch hole on the front side for an entrance and for ventilation and then covered each candy board with one inch insulation board. After I installed the insulated candy boards over the nucs, I placed a deep super containing extra honeycomb to be used next Spring and to also keep the telescoping cover from covering the 3/8 inch opening in the candy board.

For a Winter windbreak that I had designed to use as an experiment, I used a circular windshield to protect the bottom supers where the bees cluster This circular windshield can be built into any size from individual sections and breaks down easily for transport. It takes two sections to wrap around one hive or four sections to wrap around four hives. It rises to just two inches above the top entrance and vent hole. No matter which way the wind blows, the bottom box is protected. There is enough space for the bees to fly between the vent hole and the windshield. One panel costs $12.50 but it is made of galvanized sheet metal and should last 10 years which makes it cost effective. Some of you might feel that this type of an investment cuts into your profits but it is important to remember that dead bees aren't profitable at all. Safety valves that provide different kinds of protection to your hives are long-term investments that will more than pay for themselves in the future.

The methods I have been using for overwinttering nucs have been successful and should be even more successful with the addition of the candy boards and windshields. Nonetheless, there are always improvements and innovations to be made so I am asking for your help. I always listen to different points of view because there is a saying "You don't know what you don't know" and that is certainly true with me.

Overview and suggestions

By making splits and overwintering nucs to outbreed the mites and avoid expensive and harmful pharmaceuticals, we can easily double the hive count in this country within one year We can also provide for our pollination and honey supply

If you run for honey or pollination and remove two brood frames with the old queen and let the parent colony

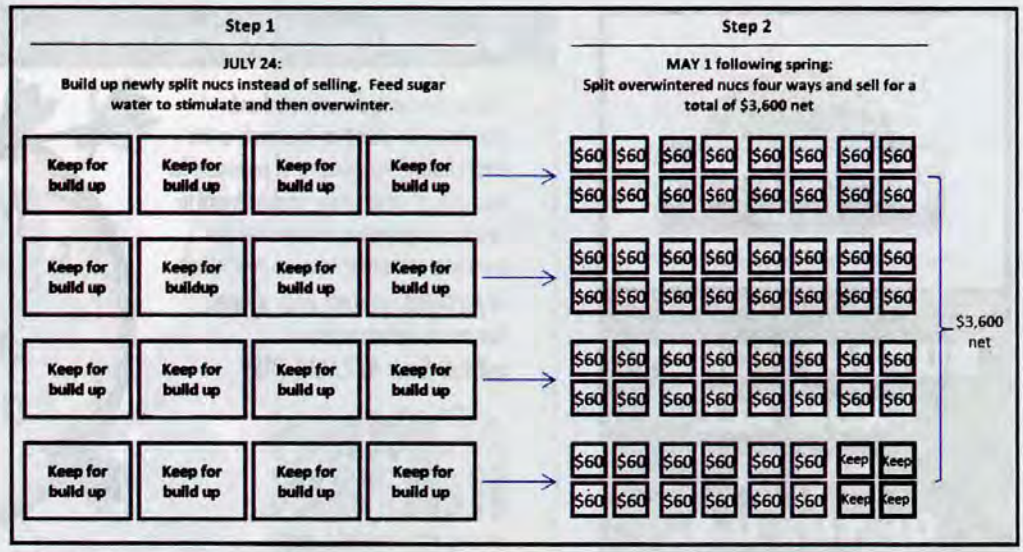


Figure 3: *Build up and overwinter your July nucs in order to split and sell them the following May for $3,600 net profit.*

requeen itself in May or in July, this parent queenless hive is in perfect condition to accept a graft of queen cells for your own use. The reason I contracted queen cells is to let everyone know that there are beekeepers that will raise cells for you and that you can transport them over 150 miles.

I would also like to make a suggestion to older beekeepers: Please, get rid of your old comb before you sell your bees to novice beekeepers. There should be no comb over five years old in your outfit. Instead of selling junk comb to beginners, render it to wax. It is okay to use the old boxes and bottom boards but get rid of the comb. The best and most profitable way to sell your outfit is to nuc it out. In my opinion, it is also better for the novice to start his hive out with a nuc because in my experience I have seen it to be a healthier, less stressed, and more balanced starter colony than a package because of the different ages of brood contained within the comb.

As for investing in replacing your old comb, a frame costs a little over a dollar and a new drawn comb will sell for $2.50 so you can double your investment within one year which is a better return on your investment than either a CD or the stock market. To do this, just put two new frames in the brood nest and when there is brood in them leave them in the bottom box with the queen and give them a complete set of new comb. Put on an excluder and place the rest of the other brood comb above it. After the brood has emerged, remove the empty comb and render it. *All combs should be less than five years old.*

Truly, Mr G.M. Doolittle, Rev. L.L. Langstroth and Dr. C.C. Miller are the real "Master Beekeepers." Because I am in agreement with what these three great beekeepers believed in and feel inspired by their work, I have humbly dedicated my beekeeping to finishing the work that Doolittle would have finished. And just like Doolittle, I live on the 43rd parallel only 200 miles west of where he lived and did his beekeeping. I take this work very seriously and, just as Doolittle, I am open to your comments, ideas, feedback, and suggestions. Successful, natural beekeeping methods are essential to the future of our bees and the beekeeping industry so we must bring forth all the creativity, intelligence, and spirit that we can muster in order to bring forth sustainable beekeeping innovations that are free to the world's beekeepers, just as the "Master Beekeepers" did when they shared the fruits of their discoveries with all... BC

Mel Disselkoen is a sideline beekeeper and operates his MDA Splitter Nucs. He lives in Michigan.

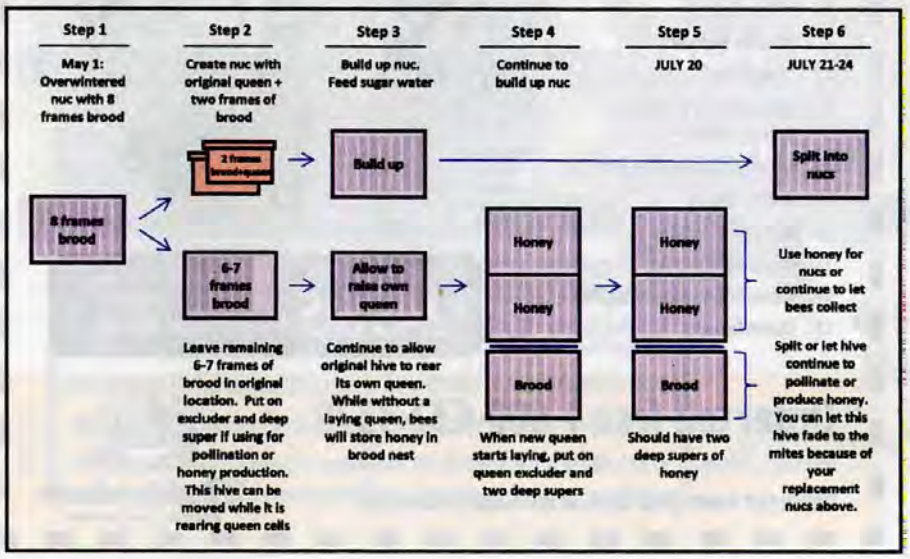


Figure 4: *Use a ¼ split off of overwintered nuc to outbreed mites and raise strong hives for honey production and pollination.*

'Bout a 100 – Sideline Beekeeping

DEVELOPING A PRODUCT & SERVICES LINE

Finding The Right Balance In Products And Services

Larry Connor

Last month I discussed some thoughts about the management of a sideline operation and marketing hive products. This time I want to dive into the issues associated with the selection of the products and services you plan to offer to customers regarding your sideline beekeeping activities.

You know you cannot do it all with your bees and there are limits on the range of products and services you can provide. You may want to focus on honey production and pollination, or you may want to jump into the value added hive product production and marketing operation. Or, if you have an unquestioning co-beekeeper, a lot of time, and plenty of energy, you may want to try to do a bit of all of these activities and select the ones where you have the most success and profit.

As a book publisher, I constantly get pressured to expand my product line, to offer new services and take risks in areas I know little or nothing about. My little business started out when I was a faculty member at The Ohio State University and a coworker (a full professor who could do no wrong), lost some really nice slides I had inherited from my predecessor, W.A. Stevens. I was upset that these images were lost forever, so I finally developed a series of slides as part of my OSU Extension program. Now, over 35 years later, those images haunt me in presentations from the "senior" members of the teaching corps at bee schools and talks.

Eventually I started a little business called Beekeeping Education Service and offered small slide sets of my own photos for sale to beekeepers. This was started in late 1975 and I sold slides at the ABF meeting in Philadelphia in 1976, the bicentennial year I continued selling these slide sets from Florida, during my Genetic Systems days, and from Connecticut after I moved. Now there is a box of leftover slide sets in my garage here in Kalamazoo. Since the world has moved to digital photography and PowerPoint presentations, those images are only of use to a few die-hards who insist they will go to their grave with the wired remote in their hand. So be it.

I purchased Wicwas Press from Roger and Marylou Morse in 1988. Then my objective was to produce quality bee books written by other writers. That objective has been met, and my insistence on good writing, good editing, excellent graphics, and affordable prices have worked for the past 20 years. Not that this has been a huge moneymaker There have been some rough patches to get through, and there are many more books on bees in print today than there were in 1988. The bee-book publishing business plan is scary – more book titles and fewer beekeepers who might read the book, if they take the time to read.

Well-intended beekeepers offer suggestions to me on how to make a fortune in beekeeping. I have been advised to enter the film and video industries, and make a fortune selling materials. Well, I actually did produce a video series, and marketed it as the Weekend Beekeeper in the 1980s. It was then I learned that most American, Canadian and English beekeepers have a Ph.D. in watching TV and will tell you every damn thing you have done wrong or disagreeable. It is okay to be told that you have some fact wrong, but it is just plain annoying to be lectured on the importance of turning off all leaf blowers for a 10-mile radius before making a videotape. When Universities and professional film companies started making bee movies, I retired from that project.

I have stuck to the subjects I think I know and can handle with some efficiency and competence. I have published proceedings of academic meetings and done a fine job with the publications. But the market just isn't there – the reality is that you might sell fewer than a hundred copies of such a publication. A few years ago I delivered hundreds of copies of a hardcover proceedings to the recycling center where, I discovered, they would be burned to generate heat and electricity That was not their intended purpose, but I could no longer afford to pay to store them, move them, or even give them away There was something cathartic in their elimination from existence.

Until 2006 I published books written by other authors. That is fine, and a well written, nicely edited and competently printed beekeeping book is a delight. Some authors made the task a delight, while others required extensive reworking – to the point where I felt I should have been coauthor Then in July 2006 I published *Increase Essentials*. My latest book *Bee Sex Essentials*, was rolled out at the Mega meeting in Sacramento last January Please don't take this the wrong way but it has taken me decades to assemble the necessary experience, self-confidence, humorous stories and self-checked ego to write books. Clearly I am a slow learner in this department.

So, having found a niche in publishing bee books, I need to generate a new book every year or so for as long

Beeswa Bar – A relatively simple product with great utility for craftspeople and homeowners.

as I live. My other retirement plan requires 52 friends who can care for me a week at a time. It would be fun to be able to do both. Some folks assume I am retired now. Remember, I am an actor in community theatre, and I can play many roles. Watch me play the retired guy It's all an act. I have worked with beekeepers most of my life, it is highly unlikely I'll ever be able to retire!

What to Make, What to Sell?

As a hobby beekeeper myself, newly relocated to Kalamazoo, I debate with myself what product I might want to produce and sell for beekeepers. The image of presenting elaborate gift boxes to corporate executives with my honey, pollen, candles, soaps and creams, is a great mental image. But I don't have the interest to do that sort of product, and I know that 99.99% of you can do these and do a much nicer job at it. I mention this because I can suggest – anyone can suggest you do gift boxes or queens or sell educational programs to schools – but if you do not want to do it and feel you have little or no interest in the subject, move on to something else.

I've thought a lot about raising some improved bee stock, something that is gentle, productive, winter hardy, adapted to northern conditions along the 43rd parallel, and is totally and completely resistant to *Varroa* mites, all the brood diseases and lots of other problems. My problem is my level of acceptance for producing something. IF I were to raise breeder queens, I would want to do it right and produce a superior product. But the effort required do the selection and breeding is beyond what I can finance, and I don't see any huge grant and staff of trained associates to carry this program forward. True, I have serious thoughts about working with other beekeepers so they can do these things, but this is a pretty small part of any business I expect to generate during future years.

Taking Inventory

You are probably better off if you do an "assets and interest inventory" before you start any new scheme of any sort, but especially with bees and beekeeping. Your assets may be financial or they may be the information you know and experience you possess. The interests must be measured as a level of your dedication to a particular subject. I am both interested in and financially motivated to write and sell books and photographs. I do not have the finances or interest to make gift baskets, as much as I think they could make someone a huge amount of seasonal money in November/December Finally, I have lots of interest in making mead, home brewed vinegar, and honey-beeswax soaps. But I want to do this for me, and for friends. I really don't have any illusions of being the next Bert's Bees, as much fun as that is to dream about. (Last November Bert's Bees was sold for $913 million to Clorox).

My age is a factor If I were 30 years younger and had a completely trustworthy partner, all this might be different. There is money to be made in almond pollination if you have the right combination of contacts, luck and experience. And you are willing to work very hard to fight the many challenges facing many beekeepers in today's world. Unfortunately, if I have to spend $70-80 per colony per year to move them into and out of almonds, and into and out of a peak nectar forage area or feed them heavily, it might be just as easy and much less risky to stay home and play with two colonies and get an exciting job like greeting folks as they walk into Wal-Mart. I suspect the latter option keeps a lot of bees on the road.

Of course not all sideline operators will consider sending their bees to almonds. Instead they will find a suitable endeavor in their own area to keep bees and to make money from them. I suppose some sideliners may elect to loose money with their beekeeping every year – perhaps to provide essential pollination services for wildlife in their area.

Some Questions to Ask Yourself?

What do you enjoy doing? Are your happy working in the woodshop making bee boxes or do you find that a chore? Are you at peace with the world when you are making up new colonies (for increase or for sale) or do you find it is stressful or do you lack confidence in what you are doing? Are value added products – from creamed honey to beeswax soap – something you enjoy making or do you find it tedious and difficult to sell? Are you a salesperson? Do you like working with honey customers or do you get someone else to wait on them? Do you have a neat and attractive sales area or do you have a corner in the kitchen filled with cardboard boxes with honey jars stuck inside?

You get the idea. Ask those tough questions of yourself and your partner, if you have one. If you contemplate developing a sideline business with someone else, you both better sit down and deal with these issues together, and in advance. Here is a list of potential products (certainly not all inclusive) for you to consider·

Products and Services

Honey wholesale – Offhand I cannot see the profit in a sideline beekeeper producing honey in drums and

Highly attractive candle display at Tracy Hunter's sales area outside Indianapolis, Indiana.

Wax products attract dust and dirt, plastic wrap may mark the wax. Tracy Hunter keeps all molded candle products in a drawer system mounted inside a cabinet. I like the fact that this gives his staff a quick inventory check.

buckets, but there are bound to be exceptions. If you have a very unique honey source and a buyer willing to pay a premium price for that honey, then it makes sense. This is especially true if the buyer already has a market for that honey and you don't.

Honey retail – A vast majority of sideline beekeepers see themselves as retail honey marketers, even if just at the home level. I have seen beekeepers use the honor system with a small honey display in the entryway of their home. Regular buyers know where to come and get their honey, and will leave the correct money or a check.

Bees, queens, queen cells, nucs – I have written a lot about these, but every beekeeper can be in a position to sell an extra nucleus hive or a few extra queens. Just spread the word at bee meetings.

Beeswax wholesale – If you have bees you will eventually have a pile of beeswax. Sale of the wax for frame exchange or to a local craft shop may generate some income at a minimum of effort.

Beeswax retail – The expansion of the wax business, with sales of blocks of bulk beeswax, is one way to increase sales. If a pound of bulk, unprocessed beeswax sells for $2, it might be worth the effort to clean it up and sell is for $8 to $15 per pound to local buyers. Never forget the market for sales to other beekeepers – the ones craftier than you.

Candle production – My impression is that the beeswax candle market has dropped lately but I know that in certain areas there is a high demand for hand-dipped, molded and rolled beeswax candles. As long as the products are tasteful, well-made and creative, candles will have a market, especially before the Christmas holiday season.

Propolis collection – There are buyers of bulk propolis that have been reported to buy your propolis scrapings for over $10 per pound. If you have more than a couple of hives you certainly should save the propolis and send it off once a year for a little bonus check.

Propolis products – For me, this is the biggest overlooked area of sideline beekeeper value added products. I visited a beekeeper in West Virginia who was making some propolis products. They were simply made and nicely labeled, and I still use some of them for various cuts and rough skin. I like to use these products over antibiotic creams. The important thing here is not to make health claims. I suggest you have a copy or photocopy of a magazine article about these products on the display, but make no claims about the benefits of their use.

Soaps with hive products – Beeswax in soaps changes the texture of the soap. The addition of a little honey makes the product seem like it should be healthier to use. I want to see someone make propolis soap, but I haven't found one yet. I don't recommend adding pollen because of allergy issues. But the addition of a small amount of royal jelly to soap might make it a premium product.

Skin creams and lotions with hive products – During the Winter I use a tiny jar of skin aide containing beeswax and honey on dry skin and lips. The products are natural and I feel better using them. And I think they work.

Infused Honey – The addition of essential oils from citrus and other plants produce some wonderful honey My favorite is orange blossom honey with tangerine oil added – it bumps up the intensity for toppings and finishes for grilled meat and fish. Check your labeling requirements,

Making sauces with honey is a great value added activity. Here are three from Tracy Hunter.

but the potential here is huge and largely untapped in most local markets.

Creamed honey with and without flavorings – Creamed honey was perfected by Dr Dyce at Cornell and a royalty was paid to the beekeeping program there for many years, supporting research and graduate students. Anyone may use the process and it is relatively simple. Creamed honey has a nice texture, but does not work equally on all nectar sources. Try some with your own honey The addition of dehydrated fruit powder and ground nuts has expanded the market for this product. Add some ground hot pepper to some for a taste shock. Enjoy!

Pollination services – If you do not have a food-approved kitchen to make some of these products (a growing trend nationwide), you may decide to specialize in the pollination of specialty crops. Here in the Midwest there are a number of beekeepers who put colonies into cucumbers, melons, pumpkins and squash. They need to charge accordingly, since the bees will generally lose resources and bee population on these plants. But these are examples of "extra income" if you are in the right area.

Educational services – Because I have sold slide sets and currently sell photographic prints I have had contact with many beekeepers who have a considerable business going into schools and Summer camps and talking about bees and beekeeping. Some beekeepers do this on a limited basis as a method of selling product – one gives each child a small honey bear with instructions for getting more honey from his operation. Other folks, including some retired teachers, charge for their services, earning over $500 a day visiting classrooms. I have done some of this. First, it is hard work, being "on" from 8:50 am to 4:10 pm in an elementary school. But as a sideline business, many well-spoken beekeepers can do this. Contact the local PTA or PTO in your local schools and other groups with funding to support these extracurricular educational events. Right now, with the CCD in the news everywhere, there is a huge interest in the service clubs and other organizations with regular meetings.

Product resale/bee sales/equipment sales – Some folks plan to have an inventory of bee supplies on hand for their own use, so the sale of some of these items makes sense. It will take a great deal of time – beekeepers will talk for hours after a $10 sale. I warned you!

There are undoubtedly more to add to this list. But enjoy the process of deciding what you want to do and how to do it. BC

For a copy of Dr. Connor's new 152 page, full color book Bee Sex Essentials, *or any other Wicwas Press titles, send an email to ebeebooks@aol.com.*

All The Buzzz in...

Calling all young scientists!

Anyone doing a science experiment about bees or honey? Tell us about it. Call me at 512-627-0113.

Happy Spring!

Bee B. Queen

Speedy Bee

So, so fast.
Quick, slick and cute.
When you go to the hive,
You fly, fly, fly.
Go!!
You know that you are the fastest bee alive.

Cade, from MI

Lisa, age 6 from PA

Anthony, age 10 from OH

Science For Curious Minds

Entomologist:
A scientist who studies insects.

An entomologist has many important jobs. They may study about life cycles, behavior and ecology of insects. Some may work with insect pests or beneficial insects like the honey bee. There are many entomologists that study honey bees.

Entomology:
The scientific study of insects.

There are close to a million insects to study, bees being one of them.

It's Greek To Me

Entomon is a Greek word for "insect" which means "cut up or divided into segments." An insect's body has three connected parts or segments. Can you name them?

I'll take an "A" please.

_ _ A _ _

_ _ _ _ A _ _

A _ _ _ _ _ _ _

There are about 8,000 professional entomologists in the United States. There are many more amateur entomologists and hobbyists who study insects.

Bug Camps

Interested in being a junior entomologi Contact your local 4-H, nature center o university to find out if they offer a clas camp for the summer. Here are a few camps around the country.

Entomolgy Camp
Mississippi State University
www.bugcamp.org

Bug Camp For Kids
Pennsylvania State University
www.entscied.cas.psu.edu

Kentucky Entomology Leadership Program
(For high school students)
University of Kentucky
www.uky.edu

Insect Summer Camp
University of Maryland
www.insectcamp.umd.edu/

Pology, Wology, Ology

If you see the letters "ology" at the end of a word, it means the study of a specific thing. Match these words with their field of study.

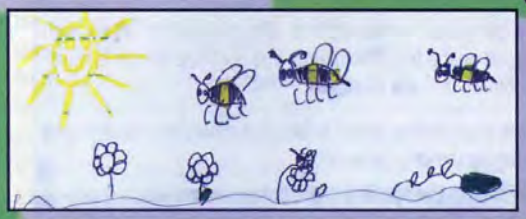
Biology	blood
Geology	past human life and culture
Zoology	plants and animals
Hematology	human social behavior
Sociology	rocks, soils, mountains, fossils
Archeology	animals

... Bee kid's corner

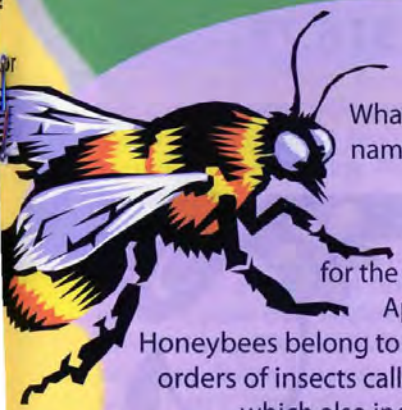
Produced by Kim Lehman -www.beeladyprograms.com
www.beeculture.com
April 2008

I like the bee's hunney. It's yummy to my tummy. I like it a lot. So I put it in my tea. It tastes good in a tea called red rose. Now that's good.

Lillian, age 7
from CA



Jesse, age 7 from CA



YOU ASK?

What is the scientific name for bees?
Ethan, age 7, CA

The scientific name for the honey bee is Apis mellifera. Honeybees belong to one of the larger orders of insects called hymenoptera which also include wasps and ants.

Performing at the National Beekeeping Convention

Bee Savers

Students from Mitch Carnie's 5th grade class in Sacramento, CA are diving deep into the study of bees and CCD (Colony Collapse Disorder). These young entomologists have been very busy. They wrote a song about CCD, wrote letters to lawmakers, made mason bee houses from recycled milk cartons, and much more.

To see their animated song and learn more about their work go to ... Beesavers.org

California was the first state to select a state insect in 1929. They chose the Dogface Butterfly.

These states have chosen t honey bee to "bee" their sta insect. Add Mississippi to t list. It did not fit into the puzzle.

ARKANSAS
GEORGIA
KANSAS
LOUISIANA
MAINE
MISSOURI
NEBRASKA
NEWJERSEY
NORTH CAROLINA
OKLAHOMA
SOUTH DAKOTA
TENNESSEE
UTAH
VERMONT
WISCONSIN

S	Y	G	P	H	K	P	A	B	A	I	V	U	X
G	A	J	E	A	A	K	U	B	N	R	E	Z	M
L	X	S	N	O	S	T	B	O	I	U	R	V	S
Y	O	S	N	A	R	O	U	T	L	O	M	X	Q
Q	A	U	R	A	R	G	E	G	O	S	O	Q	T
S	G	B	I	Z	K	N	I	K	R	S	N	U	L
V	E	W	S	S	N	R	W	A	A	I	T	I	I
N	P	W	S	E	I	J	A	H	C	M	K	L	K
O	V	T	S	B	F	A	F	R	H	D	S	V	X
Q	X	S	Q	Q	A	Z	N	N	T	S	A	X	H
W	E	N	I	A	M	D	U	A	R	G	R	A	Q
E	O	K	L	A	H	O	M	A	O	U	E	N	L
L	B	O	N	B	E	N	I	S	N	O	C	S	I
S	U	E	B	L	U	X	W	H	O	S	M	R	X
S	O	U	T	H	D	A	K	O	T	A	A	K	Z

(Look for the solutions of all the puzzles somewhere in this magazine.)

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 birthday surprise!

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 address.

The Lowly Hive Stand

A simple, frequently improvised, but critical piece of hive equipment

James E Tew

Not a high-tech discussion

Okay, don't start yawning. Though not particularly loved, hive stands are quietly important. Who of us builds a house without giving careful preparation to the foundation that the entire house will sit on? None of us. Who of us establishes a beehive, and then puts it on whatever can be found. Essentially, all of us. Tire rims, cement blocks, landscape timbers, wood pallets – or "just sit them on the ground" are examples of common improvised hive stands. If you search *Google* for "hive stands," you will get just a bit fewer than 3000 listings. This simple piece of equipment has a great number of variations.

Not sure which one to use? It's not really your fault. Though bee supply companies manufacture a simple traditional hive stand (I have lots of them in storage.), most of us don't use them. The question lingers, "Why has a dependable hive stand style not risen to the top of the hive stand list?" I don't know, but this is not a unique situation in beekeeping. For instance, why can't beekeepers design a simple, dependable way to keep telescoping covers on the colony without putting rocks on top of the hive? While I can't definitively explain why beekeepers don't have a standard hive stand design, I can offer a guess. I pose that beekeepers, while the same in many ways, are significantly different in other ways. Some of us can weld. Some of us can build. Some of us are migratory beekeepers. Some of us manage tall colonies while others of us do not. *What we will be expecting of our hives should determine what we set them on.*[1]

It's not a quick fix

I am inspired to write this piece because one of the three colonies I have in my backyard is leaning more and more each year If I lived in a world where labor and expense were not factors, I would dig a large rectangular hole about eight inches deep and fill the bottom six inches with course stone and finish the top two inches level with smaller stone fill. Smooth it out, and then put bee hives directly on the stone. I would have a well-drained, solid base that vermin would not readily tunnel underneath. But, none of this is going to happen. Labor and expenses are a definite factor for me and I frequently move the colonies to locations that will not have my world-perfect foundation base. So, like you, I'm back to wood pallets and cement blocks.

Hive stand height – the pros and the cons

Hive stand height is a tradeoff. Hives on low stands are easier to super because they are shorter; however, when working in the brood nest of this hive, a low hive stand will require the beekeeper to stoop when working the hive or to crouch beside the hive. This stooping/crouch thing sounds easy until you have done it all day Most of us choose a hive stand height (Probably about 16 18 inches) that requires us to stoop some, but still low enough to heft a heavy super off the top of the hive. Though a few models have been advertised, I have never seen an adjustable hive stand in operation – one where you raise or lower the hive as needed for manipulation.

Communal hive stands

Commonly, beekeepers devise stands that allow for a few (two minimum) to many hives to sit upon a stand or rack. This is good on one hand and not so good on the other hand. First, on a stand supporting more than one colony, *all* colonies are alerted to become defensive. In other words, while you are working hive #one, hives #two, three, and four are getting ready to sting your lights out. Smoking all the colonies at once and working as quickly as possible might help you to get around this characteristic.

Secondly, a communal hive stand, supporting more than two colonies, will require you to crowd the hives close together forcing you to either work the hive from the front or back rather than the sides. For those of you

Situation that occurs when a communal hive stand collapses.

[1] For a good general overview of hive stands including photos, see "Hive Stands" The ABC & XYZ of Bee Culture, 41st edition, pp 306-306

A hive with a traditional hive stand.

not having tried this, it is difficult to extract frames from the front or back of a colony

Thirdly when a communal hive stand – one supporting multiple colonies – fails, the failure is magnified. I can explain better if I pose a hypothetical situation. I am a clever beekeeper who has the ability to weld together a hive stand from piping and angle iron that will accommodate five hives. I have painted the stand brown and have put each of the four legs in cans that could be filled with oil to prevent ants from attacking my colonies. I have put five single-story hives on the stand that are nicely painted. Clearly, I am a good beekeeper But two seasons later, the five hives now each have two deeps and three supers and are dead weight and top heavy I must use a short ladder to manipulate the three center hives and the hive stand is flexing under the load. After a week of rain – a disaster occurs. The right front leg of the hive stand sunk into the soft ground and the entire contraption fell forward. While this event is fictional, real occurrences of hive stands collapsing are not all that uncommon. Generally, I am okay with hive stands that support multiple colonies and generally, nothing goes wrong, but when it does, it becomes a messy situation.

Cement blocks used as a hive stand.

The traditional hive stand

The hive stand in common use is simple to build or available commercially. It's a fairly good "one-size-fits-all" device. It has an angled front landing area for bees returning to the hive. Also, the angled front allows bee detritus to roll down and away from the hive. The stand is made up of two sides, a back, and the slanted front board. It is commonly made of ¾" thick lumber Essentially, it is four sides having no top and no bottom.

The good and the bad

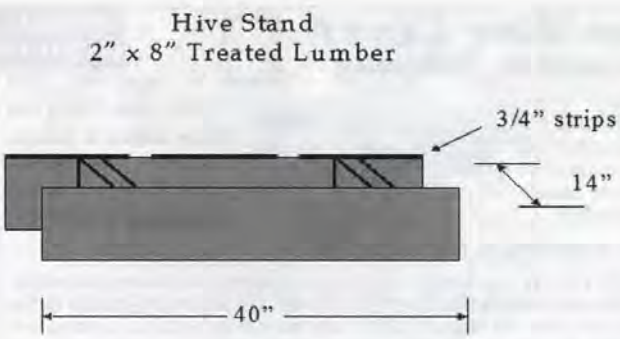
These simple devices are cheap, simple, (mostly) functional and are easily maintained. That's the good stuff. The things I don't really like are: the empty cavity underneath the hive can harbor burrowing animals like mice or snakes. My Alabama colonies had Black Widow spiders within the hive stand – but I also had these spiders in the open cavities of the cement blocks that I used under some other colonies. Another issue is that the entire weight sits on the ¾" edging of the hive stand. Not a problem when the colony is small, but as colony weight increases – in some cases to several hundred pounds – and the ground is softened by rain or snow, the hive will frequently begin to lean out of perpendicular I use these things sometimes but sometimes I don't.

The true industry hive stand – cement blocks

Many of us use two eight-inch cement blocks to support our hives. These manufactured blocks can withstand any hive weight, require no maintenance, are cheap, and are not mutilated by weed trimmer action. There's always a "but." But, my stars, these things are heavy and they never stay exactly where you put them. They sink under weight and heave in response to frost. Most annoyingly, the blocks are ever so slightly too narrow – literally by one-half inch or so. Hive bottoms are just a bit too wide to sit on the blocks. The photograph shows the bottom board overhanging the cement block. Once again, this is not a problem when the colony is lightweight, but as years pass, some bottom board rotting occurs and the colonies become heavy, the bottom board is put under significant strain. I know. I know Most of us put something – maybe a couple of boards – to widen the blocks and that will work. But you can see that now you are required to procure both blocks and boards. Bottom line – we frequently use cement blocks to put beehives on, but they are not a perfect fix.

Simple hive stands built from treated lumber

For several years, I maintained a beeyard for which I wrote a series of *Bee Culture* articles entitled *Bee Culture's BeeYard.* Though that series was completed years ago, some of the beehives are still there, sitting on the hive stands that I built for that series. I used a variation of



the hive stand design that has been used at Cornell University I used 2 x 8" treated lumber By installing a ¾" strip on the back of the hive stand, I gave the hives a slight lean to the front.

After years of use, I can report that my constructed hive stand works reasonably well. I put two colonies per stand and have done nothing to the stands since I put them in place nearly nine years ago. If I had it to do again, I would not put the riser strips on or I would reduce them to 3/8" The strange problem I had had is that the occasional colony will literally slip off the hive stand. Specifically, a student worker on a zero-turn mower knocked one of the colonies off. That made for an interesting afternoon.

Specialty hive stands

Several years ago, Israeli beekeepers designed a hive stand that held four colonies on a sophisticated metal stand. The stand allowed the bottom brood deep to be examined without having to physically remove the upper deep and supers. This was probably the most advanced hive stand ever designed, but due to cost and weight, I don't know if it is still available today

I presently have an apiary established on a retired equipment trailer This is impractical for both you and me. The trailer was a one-time deal and no more retired equipment trailers will be coming my way, but oh, it works so nicely Once in place, the heavy trailer stays level, the deck platform is clear and easy to keep clean, and no other hive stand is required for the individual colonies. "Trailering" is a very special mobile yard/hive stand procedure that has many benefits, but comes with a hefty price tag.

Some directional comments and thoughts

If you have been keeping bees for a while, out of necessity, you will have decided on some type of hive stand for your apiary. If you're new to beekeeping or if you are considering a hive stand upgrade, consider the following questions.

1 Do you have access to woodworking/metalworking tools and are you proficient when using them?
2. Will the hives be in place permanently or will they be moved for pollination or honey production reasons? (If moved temporarily, what will they sit on at the temporary location?)
3. Will the hives ultimately house colonies that will become large and heavy with honey stores or will they remain somewhat small due to small honey crops or bee management reasons (e.g. queen production)?
4. Do you have physical restrictions that would require a higher hive stand (e.g. lower back problems)?
5. Do you have pests in your apiary such as toads, ants, or skunks?
6. In your personal view, does neatness count?

When all is said and done

As my discussion closes, this is the bottom line – your bees don't even require a hive stand. They could just sit on the ground. The bottom board will rot much faster, snow will cover the entrance, and animals will have easy access to your hive, but bee life will go on. Though many people set hives on many things, to date, there has not been a perfect hive stand style developed. What you use as a stand depends on what you *can* do and what you *want* to do. However, I would recommend that you set your hives on something other than the ground. BC

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The fallen hive was struck by a lawn mower. Note the hives properly positioned in the photo.

PACKAGE TIME

Jennifer Berry

It's always good to review the basics, and to make sure you get it right the first time.

Commercial queen and package producers in Georgia have been gearing up since last Fall in anticipation of "package" time. Colonies that have been properly managed had populations at their peak by the end of March. This month bees are being shook by the millions into packages (weather dependent of course) and shipped all across the country It is an intense time for queen and package producers. They're working from sunup to sundown and still wishing for that one extra hour of daylight.

Hopefully you have been busy as well and completed your "things I need to do this Winter" list. Chores appearing on that list included ordering queens and packages, assembling new hives or repairing old ones, painting, painting, painting, and finding the best location for your new arrivals. If you ordered your packages last Winter then you should be first in line for your bees. If you haven't placed an order you may have a hard time finding packages before the nectar flow ends. Maybe purchasing nucs would be a better choice this late in the game, however finding nucs maybe just as difficult. Spring beekeeping, with either established colonies or new ones actually starts in the Fall/Winter If you remember that you'll always be ahead of the game.

Now let's get those bees in their new home.

Bees are shook into a wooden framed, metal screened box. Usually packages contain three pounds of bees but some operations will sell higher or lower poundage. Each package is given a canister of sugar syrup and a caged queen (if ordered). However, some producers will sell queenless packages. After the packages are complete they are shipped off to their final destination, your home. Here at the lab when we order packages the post office calls requesting us to please come collect our bees as quickly as possible. We've been receiving packages for years now so the postal service isn't as stunned to see thousands of stinging insects, buzzing and humming, in their back room. But that wasn't always the case. In the early, inexperienced package receiving days, the phone would ring here at the lab and the postal worker on the other end would inform me that the bees had arrived and would I please come pick them up at my earliest convenience, of course. However, the tone in her voice was actually conveying, "come and get these *$!#*& bees before they kill us all!!! And yes, have a nice day "

Your bees have traveled a good distance so take great care with them once they arrive. If you are unable to install the package the day they're delivered, place them in a cool, dark environment away from children and pets. It's a good idea to place paper or cardboard under the package since debris can scatter out from the box leaving behind a mess. If you are installing more than one package it is a good idea to install them later in the day. This will help to discourage drift since bees are anxious to bed down before dark. This gives them 12 hours to adjust to their new digs.

There are several different ways to install a package. Let's review the two most common methods. The first, more traditional way to install packages is to physically shake the bees into the hive. To do this, you first want to remove a few frames from the hive in order to leave a space for the bees to fall into. Using a hive tool, pry the plywood lid off the package exposing the top of the feeder can. To keep the bees from flying once you remove the can, lightly spray the bees with a thin mixture of sugar and water Don't soak the bees, just lightly spritz them. Next locate the queen cage. There should be a wire or tab stick-

ing out from the side of the feeder can. Take hold of the tab while removing the feeder can. The can may be snug so use your hive tool to pry it out. Take the queen cage out, remove the cork plug next to the queen candy and staple, wedge or wire the queen cage, candy side down, to the frame side exposed to the opening you created by removing the frames. Don't place her on an end frame or off to the side. You want her to be in the center of cluster She still needs to be fed until she is released. Now comes the scary part, shaking 10,000 bees from their temporary home to their permanent one. Actually it's not scary, but definitely strange the first time you do it.

Lightly shake the bees from the package into the hive. Not all the bees will be removed on this first pass so knock the package on the side to collect a mass of bees then tilt the package back and forth to allow the bees to sprinkle out from the hole. There may be a few bees remaining inside the package. That's fine; just rest the package with the hole facing the entrance of the hive. The remaining bees will be attracted to the scent of their sisters and the queen, leaving the package behind. Next slowly return the frames, and then place the inner cover and lid and you're finished. Well almost finished. You still have one more thing to do.

Another package installation technique is actually less stressful to the bees. Follow the same procedure as mentioned before except remove half the frames, and don't shake the bees from the package. After you remove the lid, feeder can and secure the queen, place the now "opened" package inside the hive. The bees will exit the package on their own which is less stressful than the first method. Shaking bees into or out of packages can result in some mortality so the second method cuts down on the number of dead bees. After a few hours go back to retrieve the empty package and return the removed frames.

Even though there may be a nectar flow occurring at the time your bees arrive, it will still take some time for your bees to orientate themselves to their new surroundings and find any food. It is always a good idea to feed your newly installed package. Actually it is imperative that you do so or they will die. Gallon baggies placed on top of the brood chamber are quick and simple however do require an additional empty super to account for the space taken up by the baggie. Entrance feeders work well only if the temperatures are in the 50s and above. Cold temperatures keep bees tightly clustered and unable to move great distances. That's why it is a good idea to feed directly on top of the cluster during these unpredictable Spring months. Plus, entrance feeders can encourage robbing if there are numerous colonies in the area. Gallon buckets, top feeders or division board feeders will work as well. Plan to feed your new colony a 1 1 syrup for six to eight weeks to help them get established.

It is also a good idea to feed pollen patties or a pollen substitute to your newly installed package. The queen will begin to lay eggs shortly after she is released and pollen will be needed to feed the young larvae. However, unless you have supplied your new colony with pollen frames or patties there will be none to be found. Again the bees will take a few days to orientate themselves to their new environment so why not give them a head start. There's a variety of pollen and pollen substitutes available on the market. If you want the real thing, natural pollen is available from several commercial sources. You can usually

buy it powdered or granulated. Mix it with honey or sugar syrup until it forms a solid patty that holds its form. Place it on wax paper and center it over the bees.

Now for the issue of treating for diseases and mites. There is considerable controversy over when, how, what, and where to treat or even if one should treat at all. To simplify life I'll tell you what we commonly do (unless the design of the experiment calls for otherwise). In addition to feeding our new colonies, we feed, feed, feed then feed some more. That's it.

One more point. If you are installing several "queenless" packages at once you may want to reconsider The bees can be a bit disoriented and may drift about from colony to colony causing a population shift to occur Here is an example of what we experienced one year after installing packages. During the swarm season we split our colonies or shake packages for use in research projects. One important lesson learned (the hard way) was it's better to introduce a queen sooner than later Here is what happened. We were setting up an experiment which required 40 colonies. We ordered queens from a local producer however decided to shake bees from our own colonies to reduce population levels and save money. After the packages were complete we installed them into their individual hives (in an apiary a good distance away from the original). Next we added the caged queen. When we returned the following day we had a mess on our hands. Some colonies were busting with bees while others only had a small cluster surrounding the queen cage. The problem was drift. Bees for whatever reason decided they preferred the colony next door as opposed to their own. Some of the colonies were starting out with six pounds of bees while others had less than one. This was unacceptable so back to the drawing board we went. When we shook the bees the second time we introduced the queen into the package immediately, left them overnight and installed them the next day. There was minimal drift the second time. The point: if you purchase a queen from a source other than your package it has been queenless for several days. You will want to introduce a queen sooner than later in order for the bees to adjust to the scent of her Obviously, you don't want to open the package until you are ready to install it so place the queen cage, mesh side toward the screen on the side of the package. This is especially important if you plan on installing more than one package in a single apiary

If you purchase a queen with your package, drift can still occur but maybe not to the extent that we experienced. For one, the bees have been with each other and the queen for days and have, hopefully, united.

Now comes the hard part, keeping those bees alive and productive. Beekeeping is an art that will teach you many different skills. There's a certain amount of knowledge needed but more importantly, a whole lot of work. But unlike inherent talent at least it can be learned and understood. Just be attentive, be patient, be gentle and be happy with your new bees.

See ya! BC

Jennifer Berry is the Research Coordinator at the University of Georgia Bee Lab.

RESEARCH REVIEWED

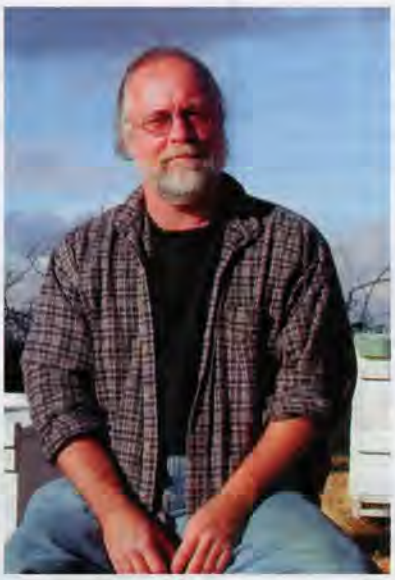
The Latest In Honey Bee Research

Steve Sheppard

"Our western honey bee may be less accommodating of 'strangers' than other honey bee species . . ."

One of the bee behaviors easily observed by beekeepers that take time to sit or stand and watch the entrance of their hives (*don't all beekeepers do that?)* is the action of guard bees as they check incoming visitors to the hive. Often it is just a quick pass that seems to say "How do you do?" to a returning forager At other times, especially with the advent of a little "robbing" and the seemingly obvious "nervous" behavior of snooping robber bees, guard bees are decidedly committed to checking credentials at the door and repelling these would be honey thieves from neighboring colonies. Collectively, details of guard bee behavior have been studied under the topic 'nestmate recognition,' an activity that is "a critical aspect of colony defense in many social insects" (Breed et al., 2004). Recently, Breed and colleagues examined the nature of nestmate recognition among several honey bee species in the genus *Apis* and found that not all honey bees were equally concerned with the colony origin of incoming bees (Breed et al., 2007).

Breed and colleagues conducted their nestmate recognition studies on four species of Asian honey bees in the Yunnan province of China. The results were compared to those derived from similar studies on U.S. populations of the familiar European honey bee, *Apis mellifera.* The Asian honey bee species used included the eastern honey bee *Apis cerana* (a cavity-nesting, multiple-comb building honey bee species similar to *A. mellifera*), two "dwarf" honey bee species *Apis florea* and *Apis andreniformis* (open nesting, single-comb builders) and a "giant" honey bee species, *Apis dorsata* (open nesting, single comb builder). The researchers used several different techniques to evaluate the level of recognition between different nests of the various species. The first of these "bioassays" was an evaluation of within and between colony aggression based on the interaction between pairs of bees that were taken from either the same or different colonies and placed together in glass vials. Interactions between the workers were observed for five minutes and the human observer had no previous knowledge of the nature of the nestmate status of the bees being tested. In the case of *A. cerana*, tested bees were considered to be guards, based on their behavior and collection location near the hive entrance. However, in the open-nesting species, the researchers collected the experimental bees from the outer curtain (of bees surrounding the comb) where bees are known to have a defensive role, but could not be sure of the defensive status (or experience) of individual workers. The results of this assay indicated that, in the between-colony and within-colony pairings, none of the four species exhibited significant differences in biting or stinging behavior This experiment was repeated every other month for eight months to check for seasonal variation. With the exception of *A. cerana*, in which 30% of the pairings showed evidence of aggression in one of the four trials, little variation occurred in the results over the course of the season. The second bioassay used the same method to test pairs of individuals, but used only individuals from the same colony. In this bioassay, one individual of each pair was treated with flax oil, a compound that results in aggression between nestmates of *A. mellifera* in the same test. However, the application of flax oil had no significant effect on nestmate recognition (biting or stinging behavior) in the Asian species, despite its activity as a "recognition pheromone" in *A. mellifera.* Similarly, in experiments with *A. cerana*, where foragers from pairs of colonies were marked and then their colony's locations transposed during the night, aggression was observed between resident bees and marked foragers returning to the "wrong" nest in only one out of four of the transposition trials. In a final look at defensive behavior, the authors examined the response of entrance or curtain bees to the alarm pheromone emitted when a captive bee held by forceps was placed nearby Only in *A. cerana* was any overt aggression (stimulation of bees to fly toward the researcher) detected.



In the Discussion, the researchers noted that "speculatively, our results suggest that nestmate recognition behavior is not expressed in these species with nearly the frequency or intensity that it is in *Apis mellifera.*" Their findings indicated an apparent lack of aggression between inter-colony pairs of any of the single-comb nesting species and very low levels in *A. cerana* (relative to *A. mellifera*). They point out that

this does not necessarily mean that nestmate discrimination does not exist in these species, rather it may not elicit behavioral expression. While Breed and colleagues cautioned there was a need for confirmation of their findings with experiments testing all species in a single location and time, it is intriguing to attempt to decipher why this behavior of *A. mellifera* might be different than in the other species in the genus *Apis*. The authors suggest that the large quantities of stored food and the presence of robbing behavior may have been important to select for the high level of expression of nestmate recognition in *A. mellifera*. That is, the presence of robbing behavior could represent a considerable risk or "cost" for colonies that did not aggressively defend their nests. Interestingly, the authors cite reports that *A. cerana* generally does not engage in robbing behavior, except when colonies are disturbed. Thus, the authors noted that robbing behavior and "fights" in this species were limited to periods of honey harvesting by beekeepers (when broken combs were exposed) or during beekeeping manipulations when colonies were combined. The limited expression of aggressive nestmate recognition behavior (colony defense against bees of the same species) in *Apis* may reflect what the authors consider to be "considerable potential costs", due to the time and energy spent guarding and the loss of life or death due to intraspecific conflicts. Apparently, colonies that don't have to defend themselves against robbers from their own species are in a good position to simply be neighborly. BC

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Breed, M.D., X. Deng and R. Buchwald. 2007 *Comparative nestmate recognition in Asian honey bees,* Apis florea, Apis andreniformis, Apis dorsata *and* Apis cerana. Apidologie 38:411-418.

Breed, M.D., E. Guzman-Novoa and G.J. Hunt. 2004. *Defensive behavior of honey bees: Organization, genetics and comparisons with other bees.* Annual Review of Entomology. 49:271-298.

a closer look

Honey Bee SPERM SURVIVAL

Clarence Collison

Queens Typically Mate With 12 To 20 Drones And Store Six to Seven Million Spermatozoa

There has been a long-standing interest in understanding the mechanisms associated with sperm survival within the spermatheca. Queen honey bees store spermatozoa within their spermatheca for the duration of their lives, which can be three to five years or sometimes longer Sperm storage enables queens to fertilize and lay eggs independent of the presence of drones. Contributions from both the drone and queen may be associated with the viability and longevity of stored sperm.

Queens typically mate with 12 to 20 drones and store six to seven million spermatozoa. Only about 3-5% of the sperm obtained during mating are actually retained in the spermatheca; the rest are lost from the queen (Koeniger and Koeniger 2000). The spermatheca is a chitinous sac with a diameter of about 1.1 mm. It is lined with a very thin epithelium and surrounded by a dense tracheal net. The lumen (interior space) is filled with a transparent fluid and connected to a pair of tubular spermathecal glands that are thought to supply a nutrient secretion. About two days after the last mating, densely packed spermatozoa fill the lumen in parallel bundles, giving the spermatheca a whitish marbled appearance. The bundles of sperm are surrounded by spermathecal fluid, which increases in volume as spermatozoa are moved out for fertilization. The spermatheca is separated from the lumen of the oviducts by a muscular valve system which keeps the spermathecal duct closed, thus forming a separate spermathecal compartment. The muscular valve system also functions as a pump for sperm transport (Klenk et al. 2004).

The pH value of the spermathecal fluid is higher than that of the blood. While the sodium concentrations in the blood and spermatheca are similar, the potassium concentration of the spermatheca is higher than that of the blood by about eightfold (Gessner and Gessner 1976). This high pH may be responsible in part for reducing the metabolic rate of stored spermatozoa (Verma 1973). There is also some evidence that the amount and functions of proteins in the spermathecal complex may contribute to sperm survival, though little information is available on this area of research.

Klenk et al. (2004) were able to show for the first time that a high concentration of protein is found in the spermathecal fluid in honey bees. These researchers believe that in addition to the high pH, many proteins are produced by the queen which have a function in long-term sperm storage. In their study, the protein patterns of the spermathecal gland secretion and spermathecal fluid were compared in three and five day-old queen pupae and emerged queens of different ages/physiological states (virgin queens, 1, 2, 3 and 10 days old; egg-laying virgin queens; egg-laying and non-laying mated queens). The spermatheca and its glands were not big enough to be isolated until queen pupae were three-days-old. The protein spectra of the three fluids, blood, spermathecal fluid and glandular secretion were similar In five-day-old pupae (two days before queen emergence), the spermathecal complex is completely developed, and the protein spectra of the two spermathecal fluids still showed similarities. However, proteins of a higher molecular weight dominated in the blood.

The concentrations of protein varied from 8.5 and 15.3 mg/mL in the spermathecal fluid and from five to 8.5 mg/mL in the secretion. The protein patterns of the gland secretion and spermathecal fluid were identical from pupae until the age of three days post-emergence. In sexually mature queens (10 days or older) the gland secretion and spermathecal fluid each had a unique protein with a molecular weight of 79 kDa and 29 kDa, respectively (Klenk et al. 2004).

The concentration of proteins in virgin queens was independent of oviposition. The amount of protein did not differ between non-laying or egg-laying virgin queens which had received two CO_2 treatments on two successive

"Understanding the mechanisms associated with sperm survival has practical application with respect to the long-term preservation of semen for instrumental insemination."

"Researchers believe that in addition to the high pH, many proteins are produced by the queen which have a function in long-term sperm storage."

days to initiate egg-laying. Mated egg-laying queens had significantly higher protein concentrations, the highest of which was found in the spermathecal fluid of queens which had stopped oviposition because of confinement (Klenk et al. 2004). In three-day-old queens, 97% of the spermathecal fluid pattern and 94% of the glandular secretion corresponded with profiles of sexually mature queens; neither the 79 kDa nor the 29 kDa proteins were detectable in immature queens.

The protein pattern of the blood in mature queens was clearly different from that of the spermathecal complex. While in the young pupae blood had a similar protein profile to those of the spermathecal fluid and gland secretion, the protein pattern became increasingly different during the process of maturation. This result suggests that in mature queens the spermathecal fluid is produced by the gland cells. Two additional prominent bands appeared in different concentrations in the spermathecal complex in sexually mature virgins and mated queens: a band at 79 kDa in the glandular secretion, and one at 29 kDa in the spermathecal fluid. Since the 29 kDa protein was limited to the spermathecal fluid of sexually mature queens and mated queens, they hypothesized that it may play a role in sperm storage. The presence of these two proteins was the only distinct difference in the protein patterns of the glandular secretion and spermathecal fluid. The amount of 79kDa protein was much lower in the spermathecal fluid in comparison to the amount of the 29 kDa protein. This study showed for the first time that a high concentration of protein is found in the queen's spermathecal fluid, and the secretion of the spermathecal glands has about half that concentration. Thus, in honey bees, female derived proteins seem to play a major role in sperm storage.

Drone bees also likely contribute significantly to the physiology of sperm storage. When a drone first emerges as an adult it has a very large pair of testes, full of immature sperm. Over the first few days of his life, the sperm develop their capability to fertilize an egg. Once they are mature, the sperm migrate to paired storage organs called the seminal vesicles where they are retained until ejaculation, and the testes shrink (Collins 2004). When the drone is sexually mature (about 13 days after emergence) the testes are reduced to small, greenish-yellow scraps of tissue, all their contents having passed on through the coiled tubes of the vasa deferentia into the seminal vesicles. The cells lining the seminal vesicles produce the seminal fluid that makes up about half of the total semen volume.

Collins et al. (2006) extracted and analyzed proteins from seminal vesicles and semen of mature drones. A total of 69 unique honey bee proteins were found. Of these, 18 identified proteins were present in both seminal vesicle and semen samples, 36 were unique to the seminal vesicles and 15 were unique to semen (although they might have come from somewhere else in the male reproductive tract). Metabolism-associated proteins were found primarily in the seminal vesicles suggesting that they may be involved in sustaining sperm prior to and during mating.

Antioxidative enzymes (catalase (CAT), superoxide dismutase (SOD), and glutathione S-transferase (GST)) were recently found in the spermathecae of mated queens which may also be involved with long-term storage by protecting the spermatozoa from oxidative stress (Weirich et al. 2002). SOD was expressed in semen and at similar levels in the spermatheca of mated and virgin queens. GST was found in the spermatheca at higher levels after mating but it was not present in semen. CAT is almost entirely associated with the sperm itself, rather than with seminal fluid and was also expressed at higher levels in spermathecae of mated queens.

Little is known about changes that take place in the spermatozoa as they move from the testes to the seminal vesicles to the spermatheca and finally to fertilizing an egg (Collins et al. 2006). Understanding the mechanisms associated with sperm survival has practical application with respect to the long-term preservation of semen for instrumental insemination. Considering the importance of honey bee breeding programs, the storage of sperm of successful lines is desirable. Now that there are restrictions on the movement of honey bee genetic stocks, mandates to select bees resistant to various parasites and pathogens, and new tools available for defining genetic traits (honey bee genome), germplasm preservation is both a logical and critical step in research. To date, satisfactory results have not been achieved for long-term storage of sperm at room temperature or in liquid nitrogen. Additional study of the function of proteins found in the spermatheca, as well as other biochemical components of sexually mature drones and queens may elucidate ways to more effectively preserve viable spermatozoa *in vitro* (outside of the living organism). BC

References

Collins, A. 2004. *Inside/out the drone.* Bee Cult. 132(10): 26-27

Collins, A.M., T.J. Caperna, V Williams and W.M. Garrett and J.D. Evans 2006. *Proteomic analyses of male contributions to honey bee sperm storage and mating.* Insect Molecular Biology 15(5): 541-549.

Gessner, B. and H. Gessner 1976. *Inorganic ions in spermathecal fluid and their transport across the spermathecal membrane of the queen bee,* Apis mellifera. J. Insect Physiol. 22: 1469-1474.

Klenk, M., G. Koeniger, N. Koeniger, and H. Fasold 2004. *Proteins in spermathecal gland secretion and spermathecal fluid and the properties of a 29 kDa protein in queens of* Apis mellifera. Apidologie. *35: 371- 381.*

Koeniger, N. and G. Koeniger 2000. *Reproductive isolation among species of the genus* Apis. Apidologie 31: 313-339.

Verma, L.R. 1973. *An ionic basis for a possible mechanism of sperm survival in the spermatheca of the queen honey bee (*Apis mellifera *L.).* Comp. Biochem. Physiol. 44 A: 1325-1331.

Weirich, G.F., A.M. Collins and V.P. Williams 2002. *Antioxidant enzymes in the honey bee,* Apis mellifera *L.* Apidologie 33: 3-14.

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SWARMING REVIEWED

Tony Jadczak

The swarming episodes of 2006 and 2007 occurred because of environmental factors Don't let it happen again this year!

During the past few years, there have been "swarming issues" among many new and seasoned beekeepers. In both 2006 and 2007, beekeepers reported swarms from hives established with packages and nucs during late May-June even though there was room for colony expansion. A number of beekeepers reported that the new hives issued swarms before the bees had moved into the second hive body In both 2006 and 2007 the primary reasons for the exaggerated inclination of bees to swarm were the weather and foundation.

Swarming is the natural reproductive behavior of honey bee colonies. Honey bees are unable to reproduce via *individual* queens, like bumble bees and wasps. Rather colony reproduction occurs when one half or more of the colony's population leaves with the existing queen in search of a new nest site.

In Maine, for instance the swarming season usually begins after the apple and dandelion bloom and continues throughout the locust, berry and early part of the clover flow. Swarming is usually more intense in years in which the bees are confined due to rain or cool temperatures during the late Spring/early Summer nectar flows and in years with intense nectar flows and insufficient supering.

Several factors are thought to contribute to swarming. The most common trigger to swarming behavior is *presumed* to be congestion within the brood nest where the amount of brood, pollen, nectar and honey stores restrict the queen's ability to lay eggs. Hives in this condition are often called honey bound or plugged out. When this situation occurs, there are a disproportionate number of nurse bees and bees of wax producing age without a job. Compounding the matter the foragers have no place to store incoming pollen and nectar Due to a lack of space and work, the colony initiates reproductive (swarming) behavior

The *age of the queen* also influences swarming in part due to the reduced secretion of queen pheromones. Functions of these pheromones include the prevention of ovarian development in workers and inhibition of queen rearing. It is thought that when the titer of these chemicals are reduced due to distribution and sharing by a large population of bees or a decreased level of secretion by the queen, preparations for swarming or supersedure will begin.

Entire books and hundreds of articles have been written on the subject of swarming since the mid-1800s. Demaree (1884) published an effective method of swarm prevention that is still used by some beekeepers. This method essentially involves separating the queen from most of her brood by placing her in a bottom brood chamber with a frame or two of capped brood and drawn comb. One or more empty supers are placed above the lower box (with the queen and an excluder) and the remaining brood is placed above the supers.

The Demaree method is cumbersome and there are slight variations of the theme regarding the use of additional excluders and hive body reversals. However, the system is effective in swarm prevention and maximizing honey yields. Every beekeeper should try this method at least once during their beekeeping experience.

Another method of swarm prevention promoted around the same time period was know as the Padgen system later modified by Heddon. This method is somewhat like splitting a hive where the queen and frame of capped brood are removed from a hive that is preparing to swarm and placed into an empty hive body with drawn comb. The parent hive is picked up and moved to another site in the apiary (while the bees are flying) and the hive body with queen and frame of brood placed at the parent hive's location. The parent hive either raises a new queen or one is introduced.

Heddon modified the system by placing the hive body with queen and frame of brood on the parent's location and moving the parent hive slightly, turned at a right angle to the original location. After two days the parent is moved to the opposite side of the hive body with queen, facing 180 degrees from the previous placement. After two more days the parent hive is moved to another location within the apiary The Padgen,

Heddon and Demaree methods involve work!

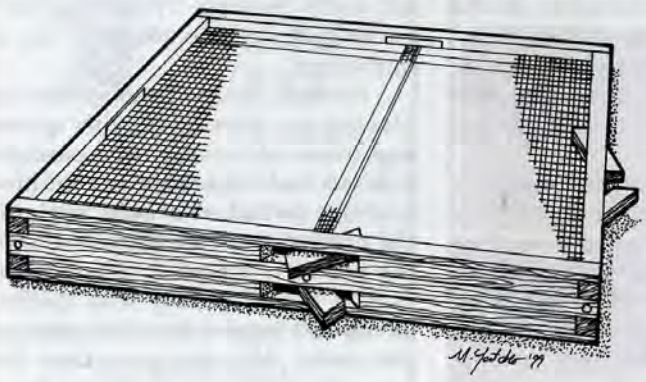
Snelgrove wrote an entire book on the subject of swarming and a mechanical means of swarm prevention. Snelgrove is credited with the invention of the Snelgrove Board, which is a double screen with four paired entrances, one above, and one below the double screen. This device is still sold by some bee supply companies. Swarm prevention is accomplished by placing the queen and a capped frame of brood into a box full of empty honeycombs on the bottom board. Supers are added to the colony, then the Snelgrove board and the boxes containing brood above the board. The upper top entrance (facing the front of the hive) of the board is opened. After one week, queen cells are cut in the boxes above the board and the front upper entrance is closed. An upper entrance is then opened at the rear of the hive and the lower front entrance of the board opened. Bees fly out the back and enter the lower unit in front. The Snelgrove board is a great way to make splits before the hive actually prepares to swarm and/or means to rear a new queen. When making a split or nuc with this system, place three frames of brood (two capped, one eggs/larvae) in the box above the board and situate a frame of honey next to the capped brood and a frame of pollen and honey next to the open brood. Open the upper rear slot.

Unless one has plenty of time and a strong back the swarm prevention methods just cited are daunting. However, the Snelgrove board or double-screened board has a useful purpose in beekeeping but not necessarily as a swarm control method per se. All of these historic methods essentially involve splitting the strong hive that is preparing to swarm while trying to maximize the bee population in order to produce a honey crop. If one follows basic beekeeping management practices, swarming can be minimized in most situations. Keep in mind that the day honey bees loose their instinct to swarm, will likely result in their demise.

Following are some basic strategies to minimize swarming in wintered hives and newly established packages or nucs when environmental factors favor premature swarming:

For wintered colonies, practice normal Spring management by reversing hive bodies (if necessary) at or before fruit/dandelion bloom (depending on where you are, it may be much earlier than this, so be sure to check). Do not split the brood by reversing if the pattern occupies the upper portion of the lower box and the lower portion of the upper box. If the bees are situated only in the upper box then reversal is in order. Do not reverse colonies too early in the Spring because the bees will be inclined to move upward where there is heat. When the dandelion (or other early crop) flow starts, super with drawn comb so the bees have somewhere to move the incoming nectar at night to clear the brood chambers where the incoming nectar was stored during the day. The drawn supers mitigate plugging out the brood chambers.

A Snelgrove Board



Strong, second year colonies and especially those with older queens are predisposed to swarm. It is best to manage these colonies and hives that are making preparations to swarm with more drastic measures such as making nucs or splits. The splits can be made in the "usual" fashion or by way of a double screen. Avoid splitting the parent colony to less than six to eight frames of brood at dandelion because honey production will be reduced. When making nucs or splitting hives, replace the frames of bees and brood with foundation. The bottom brood chamber should have honey in frames #1 and #10, pollen/brood in #2 and #9 and brood in the center Any remaining brood should be centered in the upper hive body with two frames of foundation or drawn comb on either side of the brood and honey or comb on the walls. The addition of foundation serves the purpose of keeping the wax builders busy and culling old brood comb. When the bees get going on the foundation, super in anticipation of the honey flow before the bees again plug out the brood nest.

The swarming episodes of 2006 and 2007 among packages and nucs occurred for two reasons that involved environmental factors. In 2006, there were periods of rain with sporadic opportunity for foraging and cool nights. Therefore, the bees were forced to cluster on the brood in cool weather and were slow to draw foundation into comb. When the weather finally settled the bees had no place to store the incoming nectar, resulting in a congested, plugged out brood nest. One cure would have been the introduction of drawn comb but that is not an option for new colonies managed by new beekeepers. Elongation of the brood nest would have enticed the bees to draw foundation in the second hive body thereby reducing congestion and adding comb. When a nuc or package has occupied most of the lower hive body, place two or three frames of brood in the upper hive body with brood directly below. Place the frames of foundation in the #2 and #9 positions of the lower hive body and drawn comb on the walls. The procedure, especially in conjunction with feeding syrup gets the bees to work foundation in the upper hive body.

In 2007, the situation was slightly different. A cool, rather late spring was followed by an intense nectar flow in June. Again, the bees had not drawn the foundation in the upper hive body and had nowhere to store the tremendous incoming nectar flow. Again, congestion and a plugged-out situation even though there was room to expand. Each year is slightly different but, young queens, timely management and drawn comb are what it takes to maximize one's honey crop and keep the bees out of the trees. BC

Tony Jadczak is the State Apiary Inspector for Maine.

Does Formic Acid Repel SHB?

Early Florida Tests Promising

Bill Ruzicka

The small hive beetle in conjunction with *Varroa* makes beekeeping in the southern states extremely difficult and while present control with coumaphos keeps it in check, the SHB eventually will become resistant to it and a different approach will be required.

Various formic acid treatments with the purpose of repelling SHB have been successful in repelling even high infestations of SHB (hundreds on the top and bottom) within three to five days. We do not know if it happens any faster (we did not check) or if the beetles died or just left. The fact is they went away and did not return for the observation period of 12 weeks.

Other alternative approaches to *Varroa* and SHB control are the use of natural substances having the ability to control mites. These substances may offer beekeepers practical, yet effective means of parasite control, and are therefore strong candidates for incorporation into *Varroa* IPM and pesticide resistance management programs. Considerable research on tracheal mite (*Apcarapis woodi* (Rennie)) and *Varroa* mite control with organic acids (formic, lactic, and oxalic acid) and essential oils (thymol, eucalyptol, etc.) have been conducted in Europe, the U.S., and elsewhere. Exploratory tests on controlling and repelling SHB with formic acid have been conducted in a subtropical location since 1998.

Formic acid was dispensed at 65% concentrate the first week of November to evaluate the effectiveness of standard semi-annual treatments in a subtropical climate.

TREATMENT GROUP A: Eight hives were treated with 360 grams of 65% formic acid dispensed by three half-pads having a constant evaporating rate under 75°F and 55% relative humidity of 6 grams per day, delivering 18 grams total per 24 hour period in low continuous dose.

TREATMENT GROUP B: Eight hives were treated with 240 grams of 65% formic acid dispensed by four quarter pads having the same evaporation rate as half pads under standard conditions, delivering 24 grams of acid in a 24 hour period.

CONTROL GROUP C: Received no treatment and is monitored for the presence of SHB.

TREATMENT GROUP D: Received treatment with 240 grams of formic acid dispensed by an uncut pad installed on the bottom board over 1/16 inch thick rods.

REPELLENT METHODS: We know that one full MiteGone pad will hold 240-250 grams of acid.

We evaluated the efficacy of using a dispenser with 65% formic acid on attracting, repelling, or deterring SMALL HIVE BEETLE from beehives. We looked at the contamination of honey and acceptance of formic acid treatment in organic production.

We feel that formic acid repels the small hive beetle because of its disagreeable odor or because the acid distorts the pheromones that attract the beetles to the hive especially to queenless hives or hives in distress.

Harsh application of formic acid will cause distress and attract beetles to the hives.

EFFECT ON SMALL HIVE BEETLE: The tested rea has plenty of beetles. We found a few beetle larvae in the debris on the drop test boards after three days and plenty of beetles hiding under test boards. In Groups A and B pads were installed between the outside frame and wall of shallow super with 8 frames on metal spacers.

Group D with the pad on 1/16 thick rods purposely creating a hiding place for beetle. No beetles were found under the pads.

No beetles were found in a substantial number under the top or on the bottom of all treatment groups including controls, confirming that strong colonies will keep the beetle out and formic acid application on strong colonies does not attract the beetle; on the contrary, it may deter it.

ACID EVAPORATION

Group A – three half pads fully evaporated residues 10 – 14g, empty pad 8g. **This confirms the targeted evaporation period of 21 – 35 days was reached as on day 14 pads were half full.**

Group B four quarter pads fully evaporated on day 14.

Group C Control group no pads or treatment.

EFFECT ON SMALL HIVE BEETLE: One hive in Group A has four to five beetles at the top cover All other hives, including controls, did not have beetles on top or bottom.

Group D No beetle found under pads installed on bottom. Some acid remains. Half of pads are partly or fully propolized.

REPELLING THE BEETLE FROM HEAVILY INFESTED HIVES: Group E was established as seven hives were found in a home yard with high infestation of the beetle (literally hundreds under the top cover and on the bottom board) Full pads were installed. Upon examination five days later just a few beetles were found hiding in combs of honey supers.

Conclusion: Small low-dose continuous release of 65% formic acid using pads will repel a high infestation of beetles out of the hives. The only conclusion is that strong hives will keep the SHB out and that MiteGone treatment does not attract the beetle to the hives.

By January 12, 2008, there were no beetles present in any of the treated hives. The same was true by late February, 2008.

HONEY CONTAMINATION, ORGANIC PRODUCTION, and IPM: Most countries consider treatment with formic acid the only acceptable treatment for organic production. "Formic acid, because it is already a natural constituent of honey, was exempted by the EPA from tolerance level studies. In its approval, the agency states: "Because there are essentially no residues resulting from the use [of formic acid], the EPA believes there are no dietary risk concerns with such use" European countries treat in mid-Summer without any concern of contamination.

SMALL HIVE BEETLE

We demonstrated that formic acid treatment does not attract the beetle into the hives; on the contrary group E successfully repels it for 12 weeks.

We also demonstrated that standard treatment albeit with a limited sample will repel the beetle for seven weeks. BC

The Honey Garden

Connie Krochmal

Combining honey bee pollinated garden crops with honey recipes. The best of two worlds.

Grapes

The versatile grape is very popular among home gardeners. Adapted to different climates and growing conditions, there are suitable varieties for most every area of the country Typically trained on a trellis or fence, these make excellent bee plants.

Growing Conditions

Grapes demand a well drained spot. Though they will grow in almost any type of soil, the best yields come from a deep, fertile one that is neither sandy nor heavy clay. These fruits prefer a pH between 6.5 and 7.0.

Provide grapes with plenty of air circulation to minimize fungal problems. When given a choice, a southern exposure is better than a northern.

Typically, grapes need a growing season of at least 155 to 165 days. Check catalog descriptions to be sure the varieties you're ordering will have sufficient time to ripen in your area.

Hardiness can vary considerably from one variety to another with the hardiest types thriving in zone four Choose ones that are suited to your region.

Planting Grapes

In most areas of the country, grape vines are planted in late Winter or early Spring. Once the box arrives, plant these as soon as possible. Meanwhile, keep the roots moist. Store the box in a cool place until planting time.

For bareroot plants, dig the planting holes about a foot deep and 1½ to two feet across. If you purchased container plants, the holes should be the same depth as the root ball. The space between plants can vary slightly, depending on the soil and variety being grown. For most, a spacing of six or eight feet between plants is sufficient. On fertile soils and for very vigorous varieties, increase this to 10 feet or so.

For bareroot plants, trim the roots until they're about 10 inches in length. Plant these at the same depth as they were in the nursery. ➢

RECIPES

Ann Harman

Grapes certainly come in an assortment of colors and types. We can have seedless grapes, grapes with seeds, green grapes, red ones and black ones. Big ones and little ones. There are table grapes and wine grapes, as well as grapes for raisins. The All-American grape is the Concord, excellent for making grape juice and grape jelly Grape juice was first made by Dr Thomas Welch. Since he was against drinking wine and spirits he wanted his grape juice used in church services instead of wine. His name is still associated with grape juice.

So we eat them, make wine, raisins, juice and jelly. But do we use them in cooking? Not very much. Grapes are frequently used as a garnish to make some particular dish attractive. But, unfortunately, grapes are not a common ingredient in preparing foods. Grape leaves make an attractive decoration for platters and can be used as a wrap for various stuffings, especially in Greek or Middle Eastern cuisine.

But here is a surprise – grapes used as an ingredient in cooking. This recipe is worth a try especially for those who decide they do not like Brussels sprouts. The addition of grapes makes a wonderful flavor

BRUSSELS SPROUTS WITH SEEDLESS GRAPES

1-1/2 pounds Brussels sprouts
1-1/2 tablespoons butter
2 tablespoons heavy cream
1/2 teaspoon salt
1 teaspoon orange marmalade
1 cup seedless grapes

Cook Brussels sprouts in boiling salted water until crisp-tender, about five to seven minutes. Drain. Heat butter, cream, salt and marmalade in a large frying pan, add cooked sprouts and grapes and heat until hot through, shaking pan. Makes six servings.

When The Good Cook Gardens
Ortho Books

Grapes are one of the fruits that do not continue to ripen after being picked.

Well, we have cooked the grapes. Now we'll freeze the grapes for this recipe. This recipe makes about 16 cups so you may wish to use it for a summer picnic.

WHITE SANGRIA WITH PEACHES AND FROZEN GRAPES

The frozen grapes take the place of ice cubes.

Training and Pruning

Grapes need trained to grow on their supports. Several weeks after they're planted, the first shoots should start to appear Select several of these from each plant for training. Once the shoots grow long enough, begin tying and training them to the trellis or stake. Prune the unwanted shoots.

Several different training systems are used for grapes. It doesn't matter which style you choose so long as you continue to train them until they're properly established.

Training is done over a period of several years. Once this is complete, pruning is needed each Spring to remove unwanted shoots and control the length of the shoots you're leaving. Pruned vines can be 12 to 20 feet long.

Care of Grapes

Grapes need a steady supply of moisture. This is most important when the plants are getting established and during the Spring months. Water as needed every seven to 10 days during the early part of the growing season. Once the fruits reach their full size, this can be reduced.

Fertilizer is required mostly in the Spring to get the plants off to a good start. Compost can be used instead of chemical fertilizers.

If the plants bloom very heavily, the fruits will need thinning. This increases the size of the remaining berries. At the same time, remove the abnormal ones from the clusters. Usually, the seeded varieties respond well to thinning.

Control weeds with an organic mulch. Tilling can be done between the rows. Hoe or weed by hand within the rows to avoid damaging the plants.

Problems of Grapes

Grapes are prone to various insect and disease problems, which can vary from one region to another Fungal diseases, such as mildews, are more prevalent in humid climates. Disease tolerant varieties, such as Buffalo and Ontario, will require minimal spraying. Rots can damage the fruits.

Troublesome insects include Japanese beetle, rose chafer, plum curculio, spider mite, and leaf hoppers.

Pollination and Bee Status

While some varieties of grapes are known to be self-fertile, pollination results in much better crops. In addition, there are self-sterile varieties that require pollination.

Grapes bloom for about 10 days or so. The fragrant flowers are rather inconspicuous. Along with the nectar, bees collect copious quantities of pollen from the flowers. In addition, they get honeydew from the foliage. When enough plants are available, there can be a small surplus of honey though honey descriptions aren't available.

Harvesting

Grape vines begin bearing several years after they're planted. Some varieties ripen all at once, while others are ready over a period of time.

The fruits don't become any sweeter after they're picked. Wait until these are fully ripe and mature. They should be fully colored. At this stage, the

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2 750-ml bottles of dry white wine
4 cups purchased fresh orange juice
1-1/2 cups Cointreau or other orange liqueur
2 large ripe peaches, halved, pitted, cut in thin slices
2 lemons cut into very thin rounds, seeded
4 cups seedless green grapes, frozen
2 11- to 12-ounce cans chilled grapefruit soda

Combine wine, orange juice, Cointreau, peach slices and lemon rounds in large jar Refrigerate at least two hours. Can be made one day ahead and kept refrigerated. Before serving mix in grapes and soda and serve cold.

Bon Appetit

You need to find a deep glass bowl for this next recipe. With the layered fruits it's a treat to look at, but even better to eat. It makes about eight servings so it is useful for a small home picnic.

SPARKLING LAYERED FRUIT SALAD

1 cup blueberries
1 cup sliced plums
1 cup sliced red grapes or sliced pitted cherries
1 cup chopped cantaloupe or honeydew melon
1 cup sliced strawberries
1 cup sliced nectarines, peaches or mangoes
1 cup small green grapes
1 cup raspberries

Dressing

1/4 cup lime juice
2 tablespoons honey
1 teaspoon grated lime peel
1 cup lime-or lemon-flavored sparkling water, chilled
mint sprigs for garnish

Layer fruit in order in two-quart glass bowl to make a total of eight layers. Cover and refrigerate up to three hours. Whisk the lime juice, honey and lime peel in small bowl. Just before serving, stir in sparkling water Immediately pour over fruit. Garnish with mint sprigs.

Cooking Pleasures

Here is a recipe for a quickly-made salad that can take advantage of summertime fresh fruits.

CAMEMBERT GRAPE SALAD WITH HONEY VINAIGRETTE

1/4 cup honey
1/4 cup red wine vinegar
1/2 cup olive oil
2 tablespoons orange juice
1 tablespoon poppy seeds
3/4 pound seedless grapes
3/4 pound sliced fresh figs OR apricots OR plums OR nectarines
4 ounces Camembert or Brie cheese, cut into four narrow wedges
1/2 cup pecan halves, toasted
2 quarts mixed salad greens

Combine honey, vinegar, oil, orange juice and poppy seeds in a

stem will be brown.

While grape clusters can be pulled by hand, others need to be snipped with a scissors. Handle by the stems to avoid damaging the fruits.

Refrigerate grapes for best results. They'll keep for 10 days or so. Avoid storing them in sealed plastic bags as this can cause the fruits to rot.

Culinary Uses

Grapes are eaten fresh out of hand for snacks and dessert, and added to fruit salads. They're dried, canned, and stewed. These are served in pies, puddings, and cakes. They're made into jams, jellies, juice, and wine.

Varieties and Species of Grapes

There are two basic groups of grapes – the European and the American.

European grapes (*Vitis vinifera*) aren't quite as Winter hardy as the American ones. Suitable for zones seven through nine, these are mostly grown in the Pacific Northwest, Southwest, and California. However, the hardier varieties can be grown elsewhere provided they're in a protected location.

There are two popular species of American grapes in cultivation. Fox grapes (*Vitis labrusca*) get their name from their unique flavor These are quite Winter hardy. By crossing these with the Europeans, breeders have created European-American varieties that offer improved flavor and Winter hardiness to zones four Of these hybrids, the Concord is by far the most popular

The muscadine (*Vitis rotundifolia*) is another American species. This is best suited for the South. Generally disease resistant, a number of improved varieties are available. The scuppernong, which bears bronze-colored fruits, is one of the most popular muscadines.

Muscadines do best in zones seven through nine. These grapes come in different colors, including red and black.

Of all the grape varieties, the following are among the most suitable for home gardens.

Candace

A disease resistant, seedless American grape, this is recommended for zones five through eight. The tasty fruits have a delicate, outstanding flavor These are excellent for eating fresh.

Concord

This vigorous, disease resistant, all purpose grape originated in Georgia during the 1840s. It is the main American variety in cultivation. With a sweet, full bodied flavor, Concord is a long-time favorite for jelly and juice, but also for eating fresh. This is recommended for zones four through eight. There is even a seedless Concord.

Flame Seedless

An European type, this grows well in zones seven through 10. Flame Seedless is a very popular red grape for eating fresh. With crisp, sweet, juicy fruits, this can be grown farther South than most grapes.

Reliance Seedless

Recommended for zones five through eight, this is considered one of the best tasting European-American hybrids for eating fresh and cooking. The deep red, juicy fruits are richly flavored. BC

jar Shake well. Arrange clusters of grapes, fruit, cheese wedges and pecans on salad greens. Shake dressing and drizzle over salads. Refrigerate any remaining dressing. Makes four servings.

Honey Sweet And Simple Recipes
National Honey Board

Here is another quickly made and interesting recipe featuring grapes.

DELICIOUS GRAPES

1/3 cup honey
2 tablespoons brandy
2 tablespoons lemon juice
2 cups sour cream
1 pound seedless grapes

Mix honey, brandy and lemon juice with sour cream. Pour over grapes and stir well. Chill. Serve as a special light dessert or as an everyday treat. Serves six.

A Honey Of A Cookbook
Alberta Beekeepers Association

Here is a wonderful combination of fruits, including grapes, of course.

FRUIT SALAD WITH HONEY YOGURT DRESSING

1 cup halved strawberries
1 banana, sliced diagonally
1 fresh pear, cored and sliced
1 cup pineapple chunks
4 small grape clusters
1 tablespoon lemon juice
1/2 pint plain yogurt
1/4 cup honey
2 teaspoons lemon peel
1 teaspoon vanilla

Arrange all fruit on platter Drizzle banana and pear with lemon juice to retard discoloration. Combine yogurt, honey, lemon peel and vanilla, mix well and serve with fruit. Makes four servings.

Home Is Where Your Honey Is
National Honey Board

We've done the recipes with grapes. Now let's use some grape juice.

GRAPE ICE

3 cups unsweetened grape juice
3 cups apple or pear juice
1/2 cup honey

Mix well and proceed as in making ice cream.

Honey And Spice
Lorena Laforest Bass

With grapes and various fruits available year around, you can enjoy all of these recipes all of the time. BC

tion for the project described. I had established the observation apiary in a fringe, nature-area of our main city park in the early 1990s before submitting the article for the January 1995 issue. Our initial colony was a swarm transferred from a wood-duck nesting box.

Our apiary is still in place, though as beekeepers in general have experienced difficult times, so have we. The maximum display space at our apiary permits four hive stands, and during the earlier years there was no problem maintaining that number, even generating splits. Then, as a microcosm that beekeepers across the nation have experienced, we have gone from losses to miticides to further losses to "let them" to losses to package restorations of varying success to losses to currently no overwintering colonies.

I can say that I am not aware of any stinging issues or other aggressive bee behavior in the whole time our display apiary has been in place. Our only problem, besides bee mortality, has consistently been vandals knocking over or busting up hives, chilling brood, etc. People have definitely been more of a threat to the bees than vice versa.

I see the recent article of the Green County park apiary that their entire location is surrounded with eight-foot chain link or privacy fencing, apart from the observation wall. That is likely the preferred strategy, but an expensive one. With limited funding, my less costly and mostly effective defense has been to insert ground staples next to hive stands and then using them to strap the whole hives to the ground with nylon ratcheting cargo straps to prevent the quick-hit-&-run-kick from upsetting the hives. Many times I've inspected the apiary to find hives still upright but slightly ajar with a footprint on the side. I envision that after the initial assault from a vandal, that the hives sent out their own defensive force to repel attack. That has been about 90% effective defense with the other 10% during cold, dormant times.

I hope others will be inspired by the latest success story and effective educational opportunities that a display apiary can provide. Honey bees have gotten lots of press coverage lately via CCD and pollination issues so people that never gave it a thought are now coming to understand the value honey bees provide to our whole quality of life, far beyond the tastes of honey Well done!

Rick Frey
Kendallville, IN

Kudos To Bee Culture

Keep up the good works – your magazine is great and when it arrives every month my wife and I reach for it.

Enclosed is my check for two more years.

Oliver and Margie Rogers
Jacksonville, NC

Honey - Friendly Food

In respect to Dr Sanford's commentary in the February, 2008 *Bee Culture*, "Honey – An Environmentally Friendly Food" I was interested in the conclusions. The carbon footprint of honey may not be globally significant but the example is interesting if seen in the proper perspective. Free enterprise and free trade practices are probably the best common sense approach to environmentally friendly food production, distribution and utilization. Beyond this food factor there is a whole hodgepodge of environmental unbalances that will need to be attended to before we can become carbon neutral. Probably the greatest corrections must come in the form of reductions in industrial and transportation emissions and the attendant demands of an increasing world population. Social-political interference or just plain human intransigence can be the greatest handicap to instituting progress in solving what is becoming a critical global problem.

Larry Goltz
Redding, CA

Inspired To Renew

Thanks for being there and keeping an eye out for these things (new sweetener) with your 'Catch The Buzz' messages. You just inspired me to make sure I renew my recently-expired *Bee Culture* subscription. I've already missed one month, and that's one month too many

Thanks again for all your work.

Garrett Brinton
Bayside, CA

Bees In The Birdhouse

Now that you have read how to make my Beehive Vac in the September issue of *Bee Vulture*, I thought you might like to see how I used it to evacuate bees from a building. I'll help by starting small.

My neighbor called to say he had some insects in this birdhouse he was trying to take down for the Winter I said I'll check to see what he had and remove them.

The photo shows the birdhouse full of combs of honey and honey bees.

By vacuuming the bees off each comb, as I removed it, I was able to remove all the combs and bees from the birdhouse and return it to my neighbor

The bees were combined with a small colony The honey was extracted from the combs by crushing and draining.

If you haven't made your Bee Vac now is a good time to get started.

Good luck in its use this year

Walt Dahlgren

For Beginners

Before we get bees, and after we get bees, we are all, still, beginners.

Key Ross

I dream of bees. I dream of Spring, of course, but that is discrete. I dream of bees.

I suppose a soothsayer would tell me that I dream of industry, of collectiveness and being surrounded by family and colleagues. Perhaps that is so – for one who does not think of bees.

I think of bees.

I ponder bees. I am fascinated by their ability, and their effortless skill at perfection. I consider their architectural mastery – or is it mistressy – their unwearied assumption of duty, and their utter disregard for the factuality of others' reality. They do fly, and very well. So, I ponder bees.

Anticipation is another matter Anticipation expects. I expect bees. I have read and studied, pondered and assessed. I know bees are imagined a sign of rebirth and fertility and green growth. I imagine activity, purpose, and realization. I anticipate the arrival of bees. My bees.

Like an expectant mother, as I have been, heavy with future and promise and the anticipation of joy and industry, I have prepared. I have prepared a nest, provisioned it for the awaited arrivals. The perfume of new wax, fresh wood, and clean paint delight me when I check and double check the completeness of the nursery of my anticipation.

As with all things eagerly sought and readied for, I think it likely the truth of my anticipation will be fuller, richer, harder, sadder and distressing when compared to the imagined. I recall ear infections, strep, colic, and the unknown upset that plagued the infants and brought about hours and weeks and endless dark nights of cries and wails and tears. Some mine.

I cannot soothe *Varroa.* I cannot rock away small hive beetles. I cannot cure with lullabies the misery of nosema as I sang away tummy ache. I can only shed tears when I find it has come to pass.

And yet, I anticipate. Impatiently, I await the arrival of a royal court and attending thousands. Who will become tens of thousands. I can coax nutrition and medicine and vitamins in the name of health, and hide the bitterness in sugar and honey and candy. I know they need me, but they do not.

Like my other beloved, I can bleed for them but I cannot learn for them. I encourage and prompt and watch with my heart aching tight, full of burning breath and swallowed correction. No! Do it this way, not that! And they will allow me some small consideration – the shape of the wax and the blossoms I have planted for them. But they hear the correction of another Mother And she is not so tender-hearted as I.

But we will manage. Some will live and thrive and

Russel Aceto

When I was six or seven I had a fascination with various creepy crawly things. My parents enrolled me in courses sponsored by our local museum where, imitating the super heroes we all wanted to be, we "hunted bugs." I still have my costume today Though the t-shirt with the grasshopper head and Kool-Aid stains on the front is just a couple of sizes too small. While I was always the first to "fall in" the water, (I had to be the first to capture that newt, water bug or bull frog), I never envisioned myself an entomologist or even a beekeeper, just a bug hunting super hero. Thirty years later I still find myself enjoying the odd "bug hunt." Only the bugs I am now hunting are the bees that live, check that – *lived,* in my backyard.

When I purchased my first colony four years ago, little did I know that it would blossom into not only a passion but a small sideline hobby that so far, has more than paid for itself. What started out as two colonies grew into four last year, then expanded to the six we have now. Here in northern Vermont we have a fairly steady honey flow throughout the Spring and Summer months. We have dandelion and clover in the Spring and early Summer Here on our hilltop, we also have a reliable Basswood flow and in the Fall goldenrod, asters and the invasive Japanese Knotweed. We try to pull all supers early in the Fall, following the goldenrod flow, so the bees can go into Winter with the slower to crystallize knotweed honey.

When we expanded the number of colonies we managed last year, we did so through a reliable, local beekeeper We were excited when we received the much anticipated "the nucs are ready," call in early May. Last Spring was miserable! It rained almost every day the dandelion and apples were in bloom. Our bees were not terribly thrilled with the idea of being cooped up for days on end. However, the colonies were strong. They promised to be good honey producers and we were excited about bringing proven stock into our apiary

My parents came up for Memorial Day last year and one afternoon as we were working in the yard, my father, who despite being allergic to bee stings, is fascinated with bees, said, "What's that noise? Why are there so many bees in front of that hive?" Taking a quick glance and quoting several experts, I said, "Probably just orientation flights." To which he replied, "Ummm, I don't think so."

My father was right of course, (he is always right!). I was witnessing my first swarm. The noise at first was just slightly above the normal "hum" of the bee traffic in our yard. It gradually rose to its almost deafening crescendo as the bees started to gather on the end of a branch in one of our sugar maples. As more and more bees congregated, the branch swung lower and lower My wife and mother were snapping pictures, my sister hid indoors. My father

some will perish, unnamed but keenly missed. And the flowers will bloom and fade and fall. The human children will run and play and call for me: "Mama! Come look! Your bees are on the flowers!"

There has been some Winter of discontent. But I long for Spring, when proud-pied April, dress'd in all his trim, Hath put a spirit of youth in every thing.

I anticipate bees. BC

Kelly Ross lives in Texas with her husband, two daughters, and a Siamese kitten. She is an unfinished English Lit major, quilter, and now a beekeeper with five hives, and many thousands more daughters.

Solutions to the Kids' Bee Page:

Three insect body parts: head, thorax, abdomen

Science Match:
Biology - plants and animals
Geology - rocks, soils, mountains, fossils
Zoology - animals
Hematology - blood
Sociology - human social behavior
Archeology - past human life and culture

got right into the fray, fearless. As the noise receded, we realized that the "great bee escape" was over So was my honey crop from that new colony, or so I thought.

The mass-o-bees swung like a pendulum in the tree. It was both intimidating and spectacular As they were about 20 feet in the air, I could think of no good way to get them down. I set out a nuc box, baited with "swarm bait" and hoped. My father, ever the engineer, hatched a plan. A plan any good super hero bug hunter would be proud of. Using a ladder, some rope and a saw, the plan was to cut the branch and SLOWLY lower it to the ground and the bees would just walk right in the front door You know what they say about a "good plan" .. as the saw made its final pass through the branch and just before my father could compensate for the added weight, the branch jerked. It twitched just enough to dislodge most of the bees showering the nuc box, the ground and my father's feet in bees. We lowered the "hangers on" to the ground and watched as low and behold they all marched into the nuc box. We looked for, but could not find the queen. We hoped she had not been hurt in the cascade of bees. We let things settle for a couple of hours, before moving the nuc box into our beeyard.

When I checked a couple of days later, the queen was there, they had started drawing comb and she had begun laying. In a couple of weeks they were ready for the second hive body! I was surprised to see that soon, that too was full of drawn comb, honey and brood. The queen is what I call a Vermont mutt, though she really is carefully bred from several strains of *Varroa* resistant stock. She is quite a prolific colony leader I could count on her to lay absolutely full frames of eggs, making her a great queen to breed and make nucs from. By the end of July they were producing surplus honey, (we pulled about 40 pounds of honey from this colony) and by the end of September, they were making preparations to swarm again.

WHY? What did I do wrong? The only conclusion I could draw, was that resources were readily available and moving on was the next best option. Though I tried to prevent them from leaving, by cutting cells and saying hearty prayers to the bee gods, by mid October they were gone. I eventually lured them down from the tree above my garage (this time they figured 50 feet was too high for me) and set them up with plenty of drawn comb and capped honey They made it through the Winter

When I checked them this Spring, they were once again my strongest colony I made sure I pulled out at least half of their brood and gave them supers right away, all in an effort to get her/them to stick around. Apparently it was not enough. Last week, I discovered that they again wanted to leave, and this morning I watched them go.

I don't know where they went and I have not received a call from a distressed neighbor I believe they will be OK. Perhaps this Fall when they swarm again, (I'm sure they will), they will come home. For the time being, I have a couple of her children working for me. When and if she does return, I'll be ready, with the official bug hunter cape and cowl in hand. I think I will turn that Kool-aide stained shirt into a flag, for times when the swarms are buzzing, all will know where to find the fearless "*Bug Hunter*" BC

Special thanks to Bill Mares and my wife Penny for their endless support, encouragement and of course edits.

GLEANINGS

APRIL, 2008 • ALL THE NEWS THAT FITS

COMVITA LOSES OVER $1 MILLION

New Zealand-based honey health products company Comvita Ltd. says it expects to lose between NZ$1.2 million and NZ$1.8 million this financial year on sales of about NZ$65 million.

It is a sharp turnaround from a profit of NZ$700,000 the previous year.

Comvita say it is being hurt by a much stronger New Zealand dollar and significant increases in raw honey costs.

"The below average honey season of 2006/2007, combined with strong market demand for manuka honey, particularly in the United Kingdom, has lead to significant increases in honey costs in the last few months with late season manuka honey market prices increasing by as much as 40%," Comvita says in a note to the New Zealand Stock Exchange.

Chairman Neil Craig says Comvita has undertaken a number of key initiatives that will address this supply issue for the medium to long term.

"Our ongoing strategy is to widen our product range away from high volume lower grade honeys to higher margin value added healthcare products," he says.

"Comvita's U.S. partner, Derma Sciences has reported that sales are tracking ahead of expectations," he says. "The opportunities in wound care are significant and recent FDA approval followed by the launches of a number of new product lines is growing wound care sales rapidly in the U.S. from a relatively small base."

Meantime, Comvita says it has become a one-third shareholder in a new business called Kyoto Forests New Zealand (KFNZ) with the aim of gaining income from carbon credits and manuka honey supply from reverting poor farmland to manuka bush.

Comvita says the area of manuka available to beekeepers will be increased in time, in turn increasing the contracted supply of manuka honey available to the company said.

– Alan Harman

NORTH CAROLINA HONEY BEE GARDEN

Brady Mullinax and his wife Mary (sitting) at the ground breaking ceremony for the Honey Bee Garden and Exhibit at the Ashboro Zoo in North Carolina. With help from the NC Farm Bureau and the North Carolina Beekeepers over $180,000 has been raised for the project. Congratulations to the NC Beekeepers and the many volunteers and fund raisers who made this project such a success.

OBITUARIES

Walter "Buzz" Wilson, 69, of Dolton, SD died Wednesday, February 27 in his home.

Walter "Buzz" Wilson was born April 4, 1938 in Waterbury, Vermont. He and his family moved to California as a young man. He attended Cal Polytechnic College graduating in 1960 with a Bachelor of Science Degree in Animal Husbandry. He was a member of the Alpha Zeta Fraternity.

Buzz was engaged in the beekeeping business for most of his life. He purchased his first hives in northern California in 1976. His operation grew from 1000 hives over the years becoming the fifth largest beekeeping outfit in the United States and second largest in South Dakota. He moved to Dolton, South Dakota in 1978 to take advantage of the sweet clover, known to make some of the highest grade clover honey in the world. Buzz 76 Apiaries employees maintained beeyards from the Badlands to the Sioux River from the North Dakota border into Nebraska. Buzz sold his hives and business in 2003 to pursue other business interests.

Grateful for sharing his life were his twin sons Wesley of San Bernardino, CA and Lesley Wilson of Fontana, CA; his sister Barbara Strudder of Palm Dessert, CA; special friend Marie Kacy of Marion; Marie's son Shawn (Joy) Kacy; and two stepsons Rob Talbott (Jan) and Ryan Talbott (Sarah) all of Kimbal. Buzz was preceded in death by his father, Glen, mother; Beatrice and one younger sister, Joan.

Longtime Anchorage resident **Fletcher "Bee" Miller** died on December 29, 2007. Fletcher was born in Manzanola, Colorado on April 4, 1923 to Charles S. and Blanche Miller. He worked in his family's beekeeping business in Colorado and Texas.

He served in the Army on Okinawa and in Korea. He carried his camera with him, taking pictures of historic events as well as the landscape and people.

Fletcher married Margaret Canaday in Yampa, Colorado December 5, 1947. They lived in Colorado, Texas and California before driving up the Alaska Highway with their two small children in 1954. Three more children were born to them in Anchorage.

Mr. Miller was an electrician, and in his spare time donated his skills to do electrical work for several churches and other nonprofits.

After retirement, Fletcher returned beekeeping. He provided advice and equipment to other beekeepers through his business, Bee Miller Supply, several times ordering an entire shipping pallet of live bees for distribution. He often responded to residents requesting his help with swarms and wasp nests, and enjoyed wearing "bee beards." Mr. Miller shared his knowledge of bees with the public at the state fair, and with schoolchildren.

Studying, teaching, innovating, and creating newsletters occupied much of his leisure time. More than a dozen round trips on the Alaska Highway, and additional miles all over the western states to visit relatives, offered plenty of opportunity for another hobby, photography.

He was preceded in death by his wife, Margaret; two sisters, and two brothers. Surviving sisters are Questa Woods of Seward, Doris Miller and Sharon Schmidt of Colorado, and Maurice Granzella of Texas. He is survived by his five children: Greg Miller of Anchorage, Timothy Miller of Bethel, Saralynn Ackerman (Ed) of Wasilla, Linda Medsker (Gary) of Anchorage, and Roger Miller (Linda) of Anchorage. He also leaves seven grandchildren.

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I don't get it how some people have time on their hands. For me, it's the opposite. How can anybody get it all done? Everything takes too long.

Plus, time speeds up as you get older This doesn't help, especially for me. Slim says it's a matter of percentages. She argues that if you're five years old, and you have to wait six months to get a bicycle for your birthday, that's a 10th of your life, and hence an eternity If you're 60, six months is less than a hundredth of your life – in other words, no time at all.

I get chunks of time off from my ski area job in the Spring and again in the Fall, but I still can't get anything accomplished.

A while back, I bought a bunch of pollen traps from the man who built them. I don't know what he calls them, but they're clean traps, so I get a premium price for my pollen.

We got to talking, and with this particular gentleman, you have to be wary that the conversation doesn't turn to religion. I kept it focused on bees. He remarked, "I have no idea why people don't take care of their woodenware. You see the most dilapidated, broken-down hives. They could at least keep a fresh coat of paint on them."

He's retired and doesn't understand. I'd love to paint, but I don't have time.

When I do paint my 60 hives – if I do – here's how I do it: I pick up some "mistake" paint at the hardware store, and I slap it on with a roller I scrape a little first, but basically I just paint flaky spots and bare wood. I get some odd color medleys – like red on green on blue – but I don't do it to be arty. I do it because spot painting goes quickly, and I've always got something else that needs doing – some farm project – or it's sundown in November, and I have to drive to Aspen to punch a time clock in the morning.

Winter and early Spring are the worst of times, because I work a lot of overtime on the job. On my days off, the weather doesn't always cooperate, but the bees never quit. There's mite control, foul brood control, feeding. Then, in March, before I can even put my skis away, it's time to haul the little darlings to Palisade to pollinate the apricots.

TV's an easy way to waste time, but I don't own one. I almost wish I did, just to have an excuse for not getting anything done. I can't even get all the way through my bee periodicals. You'd think on a day off a guy could stoke the wood stove, sweep the kitchen, maybe read the paper, and not have the day completely slip away But that's what happens.

Paul extracts for me, and sometimes I take advantage of his friendship and store my honey in his honey house. I went over there the other day to pick up a couple of drums to haul to Rulison to get custom packed. (There's another day shot!) Paul and the boys had worked bees that February morning, and now they were stacking supers and painting. Paul sometimes plays the radio pretty loud, and he's been known to mumble, so he can be hard to hear And he doesn't stop to talk. He just keeps working. You have to follow him around to have a conversation. But it's worth it, because listening to Paul you learn things about bees that you'd never figure out on your own.

And Paul gets stuff done. He plans ahead. He gets up in the morning and he works all day and sometimes into the night. He doesn't hold a regular job like I do, but he operates on a timetable and meets deadlines. He works seven days a week, but he also plans fishing trips and then goes on them. So I sort of envy him, even if I wouldn't necessarily trade places.

As I write this, it's the end of February, and already the growers in Palisade are calling about bees for pollination. Last year one said I missed the main apricot bloom by a week. Well, maybe he missed it by a week, because I come when I get the call. But it doesn't matter who's right. I have to keep these guys happy, and this year I promised I'd err on the side of early

Six weeks ago I inquired about "30 to 50" Spring queens, but I didn't follow up like I should have. (Where's the time!?) Fortunately that little darling Melanie from Zia Queen Bees e-mailed me yesterday She asked me to calculate exactly how many queens I want, and when. It's a simple matter of looking at the calendar, plotting my last day of work on the ski hill, then plugging in Aunt Gert's 90th in Whitehall, Montana and Cousin Yumi's wedding in Albuquerque. Right in the middle of all this – and as early as possible – is when I want to pick up those queens at the post office.

Finalizing my order might sound easy to you, but right now I'm whipped from yet another day of ski patrolling. (It's a rotten job, but somebody has to do it!) Maybe I'm not as young as you are. The prospect of seven or eight hours of sleep intrigues me.

I don't have anything planned for tomorrow after work, however I'll sit down and figure out my queen order then. I'm sure I can find the time.

Ed Colby

A Time For Everything

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