

JULY 2012

Catch The Buzz™

Bee Culture

The Magazine Of American Beekeeping

www.BeeCulture.com

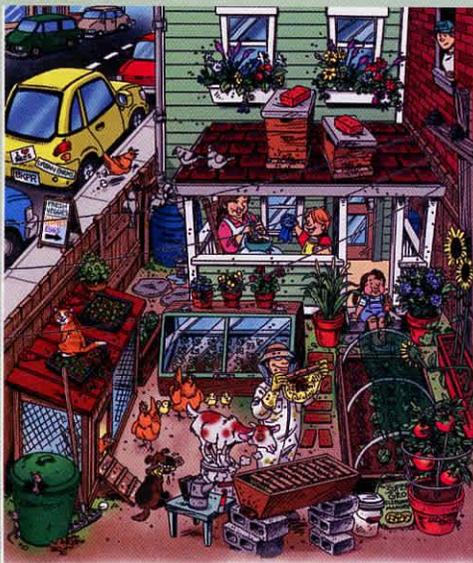


See Bee Culture At Mother Earth News Fair At 7 Springs In September

ROOT PUBLICATIONS \$4.99



7 35848 28163 9



Find the cat, the PETA guy, the mouse, the rain barrel, the goat, chickens, organic garden, bee flowers, and the city bees. Then read Jim Tew's article on page 40. And don't ya love the cover art by Lela Dowling!

Executive Publisher – John Root
 Associate Publisher, Senior Editor – Kim Flottum,
 Kim@BeeCulture.com, 800.289.7668, Ext. 3214
 Assistant Editor, Design Coordinator – Kathy Summers,
 Kathy@BeeCulture.com, 800.289.7668, Ext. 3215
 Circulation, Advertising – Dawn Feagan,
 Dawn@BeeCulture.com, 800.289.7668, Ext. 3220
 www.BeeCulture.com, Blog.BeeCulture.com

Contributors

Clarence Collison • James E. Tew • Ann Harman • Kim Lehman
 Steve Sheppard • Larry Connor • Connie Krochmal
 Jennifer Berry • Ross Conrad • Audrey Sheridan

Subscription Information

U.S., one year, \$25; two years, \$48. Newsstand price: \$4.99. All other countries, (U.S. Currency only), \$15.00 per year additional for postage. Digital Edition \$14.99. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), July, 2012, Volume 140, Issue 7, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Subscriptions, Book Orders

V800.289.7668 • V330.725.6677, Ext. 3220 • F330.725.5624
 www.BeeCulture.com; email: info@BeeCulture.com

Advertising

Contact Dawn Feagan
 800.289.7668, Ext. 3220; Dawn@BeeCulture.com

POSTMASTER: Send address changes to
 BEE CULTURE, The A.I. Root Co.,
 623 W. Liberty St., Medina, OH 44256

Advertisements are not guaranteed by the Publisher. If you have complaints please let us know so we may investigate. Opinions expressed in articles or columns in this magazine are not necessarily those of the Editor or Publisher.

Published by The A.I. Root Co. Copyright© 2012 by The A.I. Root Co.
 All rights reserved.

Bee Culture - The Magazine of American Beekeeping is printed with all natural vegetable based ink on post consumer recycled paper. Please recycle this magazine responsibly.



Bee Culture



FEATURES . . .

DIFFERENT ROADS 24

It takes all kinds of bees to pollinate almonds, and all kinds of ways to raise those bees. Two operations are experimenting with Blue Orchard Bees and ways to feed them.

Kim Flottum

PLANNING A BEEKEEPING BUSINESS 29

First of a three part series, by a professional business manager and commercial beekeeper.

Dan Conlon

GOAT BRAINS ON THE HALF SKULL 39

Goat brains, pacemakers, Albania, constitutions – you never know what topic will come up at a bee meeting.

Peter Sieling

LETTER FROM A BEEKEEPER'S WIFE 48

On the farm, Summer 1917.

Mary

BUILD A GABLED ROOF 51

Keep the girls happy with this new roof.

Pat Driscoll

HELPING OUT 54

When a beekeeper needs help, who better to help than another beekeeper.

William J. Hall

JUST IN TIME 60

It's amazing what a swarm can accomplish, especially with a little help.

Dal Allan

BILL CARPENTER 63

Florida's Renaissance Man.

Duane Waid

DEPARTMENTS & COLUMNS

MAILBOX 9

NEW BOOKS AND PRODUCTS 12
Tales Of An African Beekeeper; American Grown; Eating Planet 2012; A better cover lock.

THE INNER COVER 14
I have seen the future.

Kim Flottum

IT'S SUMMERS TIME 17
Summer, tomatoes, meetings and the chickens.

Kathy Summers

HONEY MARKET REPORT 18
Compared to last year.

A CLOSER LOOK - LARVAL CARE AND NUTRITION 21

Larval honey bees require a complicated one-time diet.

Clarence Collison & Audrey Sheridan

KEEPING BEES IN TOWN 40
What will the neighbors say?

James E. Tew

MAKING DOOLITTLE'S NUCS 44
Using a traditional technique with modern equipment is easy, AND profitable.

Larry Connor

VENDORS, PART II 57
More on how to keep your vendors happy.

Ann Harman

UNUSUAL SHRUBS FOR BEES 67
There are many shrubs to choose from for your bee garden.

Connie Krochmal

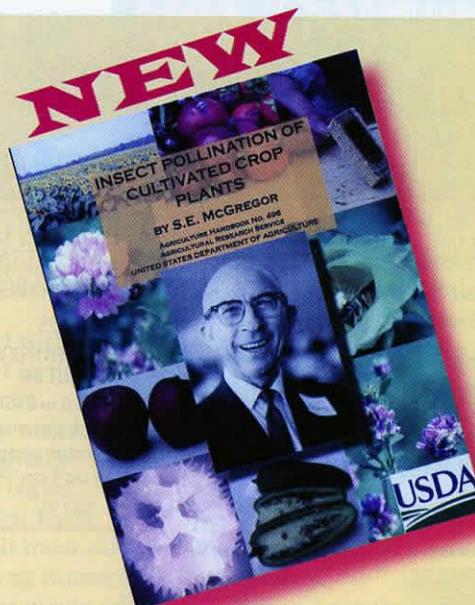
BOTTOM BOARD 80
Almost mead.

Ed Colby

GLEANINGS-71, CALENDAR-74,
 CLASSIFIED ADS-75

www.BeeCulture.com Blog.BeeCulture.com

www.BeeCulture.com/Buzz



Contents

Economics of plant pollination
 Flowering and fruiting of plants
 Hybrid vigor in plants
 Pollinating agents & Pesticides
 Beekeeping & Pollination & Contracts
 The Apiary
 151 crops

Insect Pollination OF Cultivated Crop Plants

By S. E. McGregor

Agriculture Handbook No. 496

First published in 1976 by ARS USDA, Republished in its entirety, 2011, by The A. I. Root Company

411 pages, Soft Cover, black and white throughout. More than 240 photos and drawings, 15 comprehensive tables.

ISBN 978-0-9846915-0-0. \$34.95

Added to this edition is the original Book Review by Dr. Roger Morse, published in *Gleanings In Bee Culture*, November, 1976, plus S. E. McGregor's Obituary.

X178 Insect Pollination of Cultivated Crop Plants

\$34.95

Available at www.BeeCulture.com

or call 800.289.7668, Ext. 3220

with Credit Card

Post Free In the U.S.

Add \$7.50 for Foreign

Swarm Bucket Kudos

I'm a recent subscriber to your Catch the Buzz emails and a returning beekeeper. You sent me a free copy of the May 2012 issue. Just wanted to let you know all the articles in that issue were informative and inspiring. Fortunately, I was able to take advantage of the Dave Middleton article on making a swarm bucket. After making the double bucket system, the opportunity to use it came right away on a beautiful Spring afternoon here in NY. The bucket worked great on this low hanging swarm and many of the remaining bees that fell on the ground crawled right into the empty side of the system toward their queen. This system works much better than hive bodies or other boxes. So, kudos to Mr. Middleton!

Tom Goebel
New York

May's article by David Middleton on making a double ended **Swarm Bucket**, made sense to me. I made the swarm catcher and put it aside to test on my first swarm call. That afternoon was beautiful and sunny after 10 days of cold wet weather. The next day was cold early in the morning but it warmed up by 10:00 am. By 2:00 pm. my son, grandsons and I were sitting on the back porch taking a break when my son ask why all the bees were hanging around the pine tree. Springing into our well coordinated swarm catching action my grandson and I had the swarm in the **Swarm Bucket** within fifteen minutes. We then turned it over and waited another hour until the rest of the swarm entered the other side of the trap. It was one of the easiest swarms we ever captured. However, I did make a modification to the cover on the trap which collected the loose bees without allowing them to escape once they were in the bucket. To do this, I used a cover with a cone attached. Once the bees entered through the cone they were unable to get out. A description on how to make this cone is in my book "Bee Equipment Essentials" on page 108.

Ed Simon
MN

Not Only Pesticides Are Killing Bees

I've been a beekeeper for about 35 years. It's a hobby. I have been an atmospheric scientist as long as I can remember focusing my research and my team on five main atmospheric issues, including toxic chemicals.

We must be careful with the assessment of CCD in the context of toxic chemicals. Sure, bees are killed by mites, American foulbrood, exhaustion during pollination travel, mismanagement etc. But these fatal stresses do not kill most other living creatures including humans. We must be careful that we do not let the chemicals 'off the hook'. They are part of a much larger and considerably unknown terror afflicting humans and other creatures. If chemicals kill bees let's keep up the story and add to it the impacts of these chemicals on humans. The bees in the case of insecticides are the canaries in the human situation.

There are a couple of places where the extent of our risks are most clearly and objectively stated, namely: **Agency for Toxic Substances and Disease Registry (ATSDR)** <http://www.atsdr.cdc.gov/Centers for Disease Control and Prevention> - <http://www.cdc.gov/>

We love our canaries, the honey bees, which, depending on our level of involvement, constitute a source of livelihood, a feverish farmhand in the production of many crops, a source of fascination and beauty, a source of challenge to our intellect. But they are much more. They are telling us something about the world which we have constructed in laboratories. It would behoove us to pay close attention. (To see the original Catch The Buzz go to <http://home.ezine.com/1636/1636-2012.05.07.16.37.archive.html>)

Hans Martin
King City, Ontario

Hiving A Swarm

I had an interesting swarm story late last Summer. I got a call from a honey buyer of mine who also does yard work. He found a

Bee Culture Information



fair-sized swarm in a maple tree by the courthouse in a small town 10 miles away.

When I got there the swarm was about 10 feet up. Seeing as he had a ladder I used it. About this time three young high school boys walked by. When they saw what was going on they stated running away. I yelled for them to stick around and learn something that wasn't taught in school.

They hesitantly came back but stayed about 50 feet away. I set the hive on the ground with a 3x4 sheet of plywood in front. I then proceeded to climb the ladder. I wore no protection – just a pair of snippers, which I used to cut the limb off. Bees were crawling up my arm as I came down the ladder. The boys gave me a strange look.

I laid the swarm, limb and all, on the plywood close to the entrance. Instantly bees started to run in. I had old comb in the hive. I told the boys to come closer, and they did. I told them their chances of getting stung were small. This upset them and they moved back. I then said it was 'zero' and they came back.

In a short while a lot of bees went in, but a whole bunch had clustered on the front of my hive which is common. They were about two or three inches deep.

I told them I would now do something that anybody could do – but most wouldn't. I carefully slid my fingers under the bottom bees and pulled away a large handful. They did a lot of crawling and fanning. I then shook them off in front again. The boys looked stunned but then the surprise came. The wife of the yard worker was watching,



and instantly said "I want to try that." I was amazed and told her to do it real gently and not mash any bees. She did a great job, and had as many bees in her hand as I had. She said they felt warm and also said they were like Velcro when she tried to pull them from the cluster – a very apt statement.

I said "OK, boys, your turn." One of the boys was quite big – probably close to six feet. The other smaller ones looked at him, as if to say "OK Big Guy try it!" He looked nervous but said I'm going to do it!

The closer he got the more nervous he became. Just before he touched the bees, I couldn't help it and said "There is one thing." Instantly he said what's that? With a stern look I softly said "Bees can smell fear." He pulled his hand back and looked even more panicky than before.

I was ashamed of myself, but that's the way I am. It took me 10 minutes to convince him I was joking (some reading this will say I wasn't). The big guy picked up a handful almost as big as we did. He was proud and so was I. They all shook my hand (after he shook the bees off) and said they would never learn this at school. It made my day.

I did take a chance because the boy or the guy's wife could have gotten stung and possibly have an allergic reaction. But they didn't. it worked out well.

Lucky me.

Jim Cowan
Aberdeen, WA

EPA's Cup Overflows?

The EPA says 'the cup' of environmental exposure to Amitraz products is full because the Dog Collar Market using Amitraz-based products has used any remaining cup capacity.

Let me see: Number of people, including human juveniles, exposed to dogs wearing collars containing Amitraz-based products . . .

Millions. Let's just say millions,

as opposed to say, Tens of Millions . . . avoiding sensational HUNDREDS of Millions.

And direct hand-to-product contact. How many?

Some dog-owners make face-to-product contact expressing affection. [disclosure: I am not a dog owner.]

Millions? Tens of Millions?

Now, the number of people exposed to bees wearing Amitraz-based products . . .

Ten? Five? Let's just say fewer than a hundred. And direct hand to product contact? None. Can we so boldly state? How about face to product contact, expressing affection?

None? Maybe that's too strong a declarative statement. I've seen one person [on camera] near-rub his face across a frame of bees. I've only been on the planet for 58 years so it is POSSIBLE I missed other direct face to product contact. However, exclude the first 33 years because we've only had *Varroa* for 25 years.

Now a gentle look back.

EPA in their IPM doctrine has doctrinally erred. The bee industry has enjoyed one and one only effective treatment release through two full cycles of products. Apistan was a good material. Was. Cumophos was a bad material. Was. Tactik is a good material – but soon will be Was.

Never the Less – The Winter losses in 2012-13 are going to be ugly. You read it here first.

But dogs and their owners will fill the cup of exposure. Bees; well, too bad.

Go apply a MAQS; and check with me in November.

The Skep-tick.

Bee Skep Money

I was digging through my family archive and found something that may be of interest to beekeepers.

I was trained as a beekeeper by Albert Jaycox, Univ of Illinois 1979, Did beekeeping when comb honey was still produced by ME in bass-wood square sections!!

The bees are now under the direction of my brother, Steve King.

I have the bank note shown in these images in my collection.

The attached images are of a 10 cent note from 1863 issued in Raleigh, North Carolina.

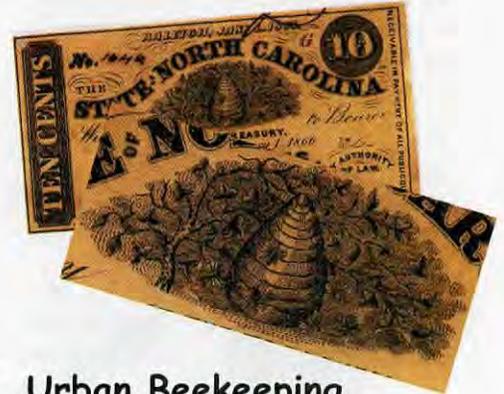
The engraving is quite clear and

crisp and the note is Hand Numbered and Hand Signed

This bank note was issued by the state where the Confederacy was born and predates its leaving the Union at the out break of the civil war.

I think the prominence of the Skeps inclusion shows the value of beekeeping to the nation/state at even this early date in our history.

Phill King
McHenry, IL



Urban Beekeeping

I've been a subscriber for several years and enjoy your magazine greatly.

I read an article in the most recent issue called, "Tasting Brooklyn's Honey" which got me thinking about honey collected from urban beekeepers.

I do not live in an urban area however I did at one time. I know there is precious little for bees to forage on in a metropolitan area. Knowing what I do about bees/ honey I can confidently say that it takes a large amount of foraging plants in order to get surplus honey from a hive-this is not something every beekeeper doesn't know. My concern with beekeeping in urban areas is what the bees are foraging on and, if I had to bet money, I would say their most visited "nectar" source would be the closest dumpsters where so many sweet things collect. I live in an area where there are plenty of people but there is no shortage of foraging plants during the nectar flow and I get a fair amount of honey from my hives. When the nectar flow ends I can tell you that the dumpsters here are swamped with honey bees.

I am writing to see if your magazine is possibly interested in pursuing the notion that urban honey contains mainly ingredients from soda cans and other sugar laced refuse.

Your thoughts are appreciated.
Howard Christian

Good Reading For Summer 2012

American Grown. The Story of the White House Kitchen Garden and Gardens Across America. Michelle Obama. Published by Crown Publishing. ISBN 978-0-307-95602-6. 10" x 10", 272 pages, all color. \$30.00. Available online, bookstores and probably everywhere books are sold.

This is, among other things, the story of the White House Kitchen Garden on the south lawn of the White House and a lot about the history of gardens on the White House lawn. It is, among other things, a pretty good resource for gardeners with good information on crops to grow, how to grow them and how to use them later. The photography and diagrams are excellent, and the bits and pieces on growing vegetables, the pitfalls and trials and errors of novice gardeners, and simple pleasures in harvesting good food through all four seasons are entertaining, educational and still very real for those who have, or have had family gardens in their lives.

But it is also about the First Lady's nationwide initiative called "Let's Move!", a program to address the epidemic of childhood obesity by, among other things...eating better food. Exercise certainly is in the picture...but food is the core. The book brings together the many schools and organizations from New Jersey to Iowa to Oregon she has worked with on the project, plus it highlights a whole list of organizations in cities across the country that are doing similar projects...providing the opportunity for children to learn to grow, and then learn to eat healthy, local garden foods. The best reason

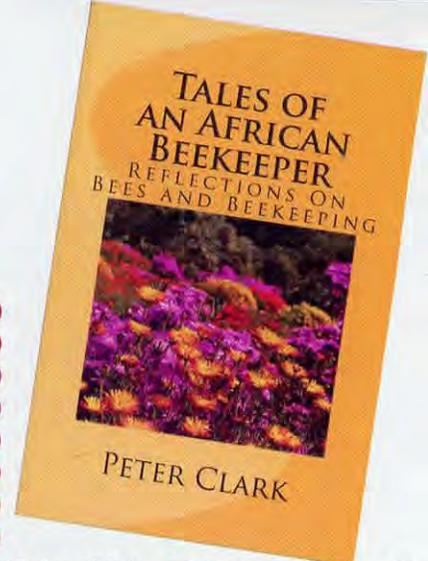
to read this book is to see what other passionate, dedicated people have done, usually with little or no budgets, time or help to provide better food for the people they serve. If we have learned nothing else from the current honey bee crisis, we must have learned that honey bees, and certainly children, too, need enough good food, at the right time, in the right place.

There are chapters on spring, summer, fall and winter gardening...the crops grown each season, and a collection of recipes using the vegetables grown in that garden. Good recipes I'll say...I've managed to produce three cookbooks over the years, and my collection of good food recipes just got bigger. Try some of these. The recipes use the food that's grown in the gardens, and uses it in recipes that are easy to make...fancy takes a back seat to practical and good here.

Of course no garden exists without the help of honey bees, and getting a beehive onto the White House grounds was a bit of a challenge. But when the resistance was overcome, Charlie Brandts, a White House Carpenter and beekeeper, stepped up and took command. (That Charlie and I were able to solve a problem they had in the garden with bees and water mentioned here has no bearing on my feelings toward this book at all, you can be assured. Really.) Charlie has been called The Beekeeper In Chief. That's almost an understatement when considering he was not only the White House beekeeper, but the beekeeping industry's center of attention for all of this. And now that he has retired, his task will be shared with several of the kitchen staff...Susie and Bill...who are eager to move ahead. But Charlie will be in the background, just in case they need a hand.

No, if you are a gardener, if you worry about kids, if you are concerned about the future of food, you will benefit from the information in this book. It's a good story, and it's good that it can be shared.

Proceeds from this book go to The National Park Foundation, the charitable partner of the National Park Service. – *Kim Flottum*



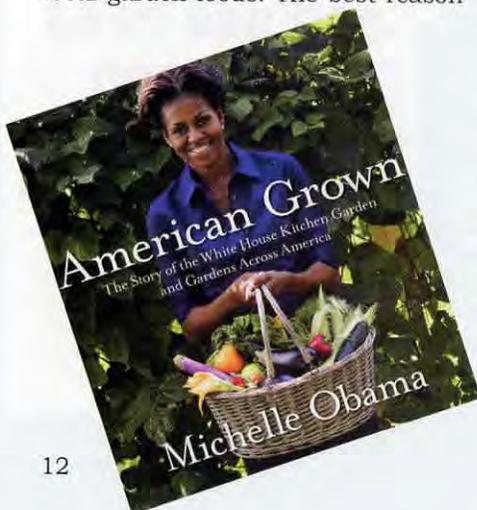
Tales Of An African Beekeeper. Reflections on Bees and Beekeeping. Peter Clark. Self published. ISBN 978-1469966717. 6" X 9" 230 pages. All black and white, no photos or drawings. \$10.97 on Amazon.

I was a bit skeptical when I first saw this book, but I went to the author's web page...he is a commercial beekeeper who sells honey, does removals and pollinates crops in South Africa...and took a quick look. It seemed OK, so I got a copy from Amazon.

I was pleasantly surprised as this a very well written, informative book about keeping *Apis mellifera scutellata*, the real African bees in their homeland – something I really know very little of. Though the bees are very, very different, the way they keep these bees is not all that different from our techniques, but it's those differences that are interesting.

The Kit. This is your bee suit, veil, gloves, and boots. The author still uses a helmet with tie down veil, but a full, thick material suit, with collar, full shirt and jeans beneath, socks over the beesuit and heavy duty boots and heavy vinyl gloves...not leather gloves. He explains that experienced beekeepers will strip down to a beesuit, boots and socks and veil, but no gloves, and less on underneath...it gets hot.

But the best time to work bees? From dusk to dawn. Start just as the sun is going down, and finish up asap. How fast is that? Two minutes is enough to examine a hive....more is too long. Don't use lights if you can. And keep them separated...one beeyard he described had 20 hives in a line 300 yards long, and by the



time he got to the last one, it was riled up, and, as he put it, it was war. And beeyards...vandals are a problem. Fences are necessary.

Pests and diseases are rare to nonexistent, with the exception of the invasion of the cape bee from the far south. Swarming will cost you 20% of your hives every year. But swarming will return those if you use catch hives or remove bees from unwanted places.

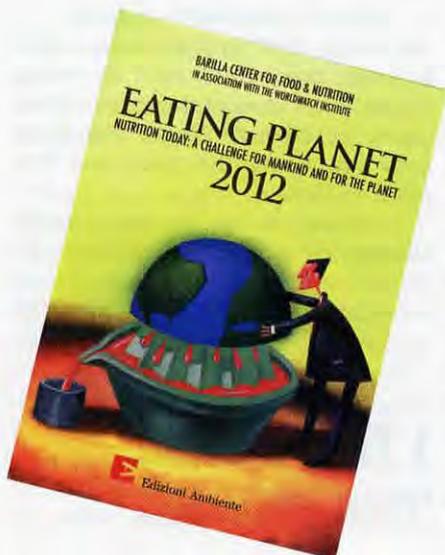
There are two, well three kinds of beekeepers. The hobby beekeeper of course, then the commercial who doesn't move, and the commercial that migrates and stays away for long periods of time. Stay home beekeepers make less honey than migratory beekeepers, but they don't have as much work.

Probably the biggest difference is in preparation for extremely fierce attacks. One such he related...

A beginner's class was to examine their first hives. They were instructed to park on the road, not in the drive of a nearby business, leave keys in the car. When the last hive examined exploded the instructor yelled Run! And everybody did. One fell in thick grass and his tie-down veil came off...200 stings on face, neck and head. Customers and neighbors at the business were stung, a dog was stung. Students who didn't listen and locked their cars couldn't get keys out without being stung so ran and ran.

You'll learn a lot from this book...you'll learn a lot about your beekeeping, and you'll be very glad you have the bees you have.

— Kim Flottum



Eating Planet 2012. Published by Barilla Center for Food & Nutrition, with collaboration from Worldwatch Institute. 309 pages. Color throughout.

Washington, D.C. Worldwide, 30 percent of food is wasted, 1 billion people go to bed hungry each night while another 1 billion suffer from health problems related to obesity, and agriculture contributes to a third of global greenhouse gas emissions. Meanwhile, young people are increasingly disconnected from how their food is grown, making solutions to the global agricultural system seem even further out of reach.

In response to these problems, the Barilla Center for Food & Nutrition (BCFN, www.barillacfn.com/en) is releasing a report, *Eating Planet*, highlighting the challenges facing today's food and agricultural system, as well as the myriad benefits that reform could bring. It is important to appreciate the linkages between technology, culture, and agriculture, and how they can alleviate hunger and poverty.

The report is divided into four sections: Food for All, Food for Sustainable Growth, Food for Health, and Food for Culture. Each of these sections ends with concrete recommendations, proposals, and actions that need to be taken to solve the global food crisis.

Food for All: Because agriculture plays such a large role in rural populations in developing countries, growth in this sector is at least twice as effective in boosting incomes as growth in a non-agricultural sector.

Food for Sustainable Growth: Environmental degradation, including water scarcity, soil depletion, and deforestation, are all results of the industrialized agricultural system, and these problems seriously compromise future generations' prospects of well-being.

Food for Health: The global food system also affects issues of human health, including incidences of disease, malnutrition, obesity, and diabetes.

Food for Culture: The report emphasizes the need to reconnect people with producing, obtaining, preparing, and eating their food.

To improve universal access to food, policymakers must address the lack of transparency and responsi-

bility in the commercial exchange of food around the world. The food system must encourage "sustainable well-being," or the idea that people's current well-being should not be achieved at the expense of the happiness or prosperity of future generations.

Available only as an ebook from Amazon or other bookstores online.

Camlocks by Lewis Mill Hive Works – I don't like rocks. So I designed a camlock system that attaches to the telescoping cover and locks into the recessed handles on the hive body or supers.

Mann Lake, Brushy Mountain, and Western Bee were the same distance between the cover and the recessed handles. Dadant was slightly less, but Kelley had a different distance on their hive body than their super, which required a double cam that could turn to the left with the hive body and to the right for the supers.

But some beekeepers put entrance reducers under the back of the telescoping covers in the Spring for ventilation and to keep the right entrance reducer with the right beehive.

It took some thought. I had camlocks mounted on the side of the hive, but if I put the camlocks on the front and back and used a double camlock that I had designed for Kelley on the back of the hive, you could turn the camlock to the left when you were using the entrance reducer and when you stored the reducer under the back of the telescoping cover, turn the camlock to the right and it was a perfect fit!

For information visit www.lewis-mil.com or contact us at clewis2@hotmail.com, 25081 Highway 5, Keytesville, MO 65261, 660.788.2602. Basic camlock, \$6.95/set; double, \$8.45; a single and a double camlock for storing your entrance reducer under the back of the telescoping cover costs \$7.95





INNER COVER

One of the most often neglected management operations beekeepers do is to take, and use, good records. Whether at the single colony level, a distant beeyard or an entire operation . . . good records are hard to do. What happens too often, if we take records at all, is that we religiously write down what's going on when we are in the field (I've actually used notebooks you can write in when the paper's wet) – weather, colony or yard conditions that need attention, equipment needs – you know the routine. Then we pack up the smoker, hive tool, whatever else, our notebook and

head out. If we're lucky, the notebook gets in the house. If not, it stays in the truck on the dash, unread, unused and unwanted, until the next time, when we do it all again.

There are some among us that get that actually do get that notebook inside and do something with the information we wrote down – transcribe to another book, enter the data into a computer program of sorts, make notes – and even fewer that actually do something with the information gathered. Grab supers and put them on the truck, get those replacement covers ready, order a few queens because a few out there are gone or dead or whatever . . .

But imagine this . . .

With your smart phone or iPad in your back pocket ready to go you pull into a yard – take out that magic device and scan a QR code (like the one on our cover) on the side of an individual hive or one on one of the hive covers for the whole yard and instantly have at your finger tips all the information ever recorded for that hive or that yard. Everything – for every year it's been there.

Then, using easy to use, simple touch screen technology you examine and record the data you want – if you are within range you are doing it real time, uploading the data to your cloud web page collection, or if not, it's going directly into your device and will automatically be synched when you get back in range. All of your data stored wherever you need it, whenever you need it and not left in the truck, unused and forgotten.

But wait, there's more.

Soon to come – fully, partially or hardly at all instrumentized hives. Weight, humidity, temperature, external weather, photos, videos and more. From one or many hives in your yard or yards. All linked together with a supervisor hive sending the data in real time to your – phone, home computer, laptop in the truck – wherever you want it, and all three if you want that. Or none of the above. Just a hive, bees and your data entered into a simple spreadsheet-like program at home. As sophisticated, or as simple as you want, and as you need.

That's what Hive Tracks is going to be, and it's almost there now. If you haven't already, take a look at it now, better, use it. It's free. It's about the best record keeping and data generating tool I've found, and you can give it a test run right now. There are so many things you can do but you need to do them, and you can at www.hivetracks.com. You can do a test run, without entering any of your real data, or you sign in and set up an account. Set up the account and play with it for awhile. Then go out and get some data on one of your yards and colonies and get it into the program.

Oh, at the top of the screen there's a little green button with DONATE written on it. Here's my thought on that. They don't charge anything to use this program. Really. So how do they make a living you might ask? Well,

part of it is below, but mostly, so far, they do it for nothing. It's a growing concern, and the goal is one day to grow this to the point where people like *Bee Culture* want to reach out and find people like you who are using the service – yes, we'll buy advertising on the site I suppose. I don't have an issue with that. I'd like to think that the folks who are using a smart device like this are pretty good beekeepers. And will stay beekeepers and are probably growing beekeepers. What business wouldn't want to make them aware of other tools they can use. Anyway, here's another thought.

Put that link on your club's web page and get your members to use Hive Tracks. When you look at the map part of the program you can see right where other beekeepers are (if they tell you, and they don't have to if they don't want to), and you can see what's within one, two and three miles of every beeyard that's registered. And if you are like so many other clubs you probably have a local queen production program going on . . . so where are those drones coming from – or, better – where can you put mating yards where they will do the most good? Even if you don't have a queen program sharing data and information can only help doing what you do, and learning from each other. It's like an ongoing meeting of sorts . . .

What is everybody using for . . . *Varroa*, or AFB? And is there an AFB hot spot nearby? Where's it coming from? What preparations are folks using for Winter? Where did everybody get queens this year, and how did they do?

I trust you can see the value in all this. So put up some funds for the privilege of using this.

And that sharing thing goes

I Have Seen The Future

even further. We've already mentioned the map feature – nearly 2000 beeyards are on the map. You'll find someone near you, and, without sharing who you are you can group your data and see the results of others' actions. Sort of a hivemind if you will that's even bigger than your club's data set. Which leads me to the next part of this . . . Hive Tracks' relationship with the BIP program found at <http://beeinformed.org/>. **BIP** is the result of a five year, multi-million dollar grant administered by Dennis vanEnglesdorp, along with a slew of other scientists, with the intent of, as their slogan says . . . Using Beekeeper's real world experience to solve beekeeper's real world problems.

And the sharing thing is totally, completely up to you. You can opt in for any or all of the sharing. If you know Facebook you know what that means. If you don't, it's simply if you want it to be secret, it stays secret. No sharing. But, like Facebook, you can share all you want – photos, locations, management schemes and their success or failure. Not yet, but a smart phone app is in the works to make this even easier – read the QR code with your phone or go to the Facebook page and you can see in a second what's going on without ever opening your hive. And you always have your phone with you, right?

BIP, if you recall, ran a national management survey earlier this year and in previous years. They wanted a reasonable count on Winter losses, and what may have led to those losses, so they put out a survey asking a boatload of questions – and the results of that survey can be found at <http://beeinformed.org/results/>. We published the news release in June in a CATCH THE BUZZ release you can read here (<http://home.ezezone.com/1636/1636-2012.05.31.10.10.archive.html>) . . . but you could have read it in June if you were a subscriber (for a FREE subscription) to our CATCH THE BUZZ go here (<http://www.beeculture.com/buzz/>).

You can see how well BIP and Hive Tracks could team up to capture a ton of ongoing, live data – what are people all over doing, how is it working, and how do I do it that way, anyway? And the plan is to do this on a quarterly basis, not annually, so the data is up to date

and even more useful...and probably more accurate, 'cause what did you do last year anyway? It's tough to remember – unless of course you are using Hive Tracks and have it in your database – see, this is getting better all the time.

I recently had the opportunity to discuss these programs with the folks involved with the front end of the BIP Survey – Dennis vanEnglesdorp, Jeff Pettis, Karen Rennich and the crew, and then a bit later the folks behind the scenes of Hive Tracks, James Wilkes and Mark Henson so I'm getting a better feel for how it all works and fits together, and what it can accomplish if it gets used by enough beekeepers.

So wait, there's more.

Already the BIP program's survey data is being prepared to be added to the mix so there is going to be much greater depth to what you can find out when you are using both BIP and Hive Tracks, and they're preparing to add the data from the NASA hive weight program carried out by Wayne Eisisias in Maryland, and the Bee Lab in Beltsville is contributing data from their disease analysis program – all of this is adding up to an incredible data base of information that will be available to everybody. It won't be a million reports you have to sift through to find an answer – but all the information from a million reports in one place...just for you, to use any way you want.

This seems like a pretty good idea to me. One that's been a long time coming, and an even longer time being needed. Finally, in one place, government, university, hobby, sideline and commercial beekeeper data all in one place. I don't know of anything like it anywhere, and it's almost here. But . . .

I do know you should take a look at the Hive Tracks program if you haven't already, and take another look if you already have – look deep into what it can do for you now, and just imagine what it will be able to do as it evolves. And then talk your club into helping to support it. There's a lot of reasons why you should, but the best one is that it will enable you to be a better beekeeper. And take a look at the results of the BIP survey. There are some interesting pictures there that will give you a feel for what works, and how well it works, and that, too will enable you

to be a better beekeeper. And there are some surprises, too...both pleasant and some not so pleasant.

You will learn a thing or two, I guarantee it.

Speaking of the future, a couple more things. The Almond Odyssey isn't nearly over. Yet to come are a day with Randy Oliver in a few of his beeyards having several conversations. There's some time spent with the California Almond Board people, which is an eye opening experience, and some with John Miller, a commercial California/North Dakota pollinator and honey making beekeeper and subject of the book *The Beekeeper's Lament*. Just before that we visited with Jeff Anderson, A California/Minnesota migratory beekeeping operation who is one of the leaders in the ongoing EPA pesticide discussion, along with Darrin Cox and others. Jeff has some scary stuff to show... And there's a day with the folks at Olivarez Honey Farms, looking at their queen production operation. And don't forget the Inspectors...gotta talk about them, too.

And last, but certainly not least is a look through the lens with Kodua Galeiti, the photographer who went along for the ride on the Odyssey. She lives with her husband and assorted animals in the LA area and spends time doing an odd mix of other activities which seem to add to the bigger picture. We took her truck and my connections and traveled from Bakersfield to all those points north for just over two weeks. Meet Kodua next month, and look for more of her photos.

Finally, if you live in the east half of the US and want to spend a couple of days completely overwhelmed with the lifestyle of MotherEarth, come to their fair at the 7 Springs resort in PA in September. It'll leave you breathless. Really.

It's July . . . the month we celebrate the beginnings of what we get to enjoy every day. Be mindful of how we got to where we are, especially on the Fourth. It wasn't easy getting here, and we have to work to keep it here. And keep your hive tool handy, your smoker lit and your veil tight.

It's Summers Time —

Summer, Tomatoes, Meetings and The Chickens

As I write this we're less than two weeks from the official first day of Summer. Here in Ohio we've definitely had some doses of Summer already – a few of those blistering hot days where you feel like you can't breath. The Farmer's Market started last Saturday in our town square and the Medina Community Band is playing every Friday night in the Gazebo. These are true signs of Summer in Medina. And we no longer have to slow down to 20 mph as we pass the Career Center on our drive into work each morning. I'm not sure who's happier about that – the kids or Kim.

The garden is planted, for the most part anyway. I still have some leeks and chives to find a good spot for. But the nearly 50 tomato plants are planted and staked along the outer edges of the garden, with squash, gourds, lettuce and watermelon in the center. The tomatoes that wouldn't fit in the garden are in large pots on the deck scattered among the flowers. You might ask why would only two people need 50 tomato plants – no I don't freeze or can them. Well, for starters they are almost all different varieties and every year there are new varieties, so we feel compelled to try them. Nothing like a fresh tomato right out of the garden. So we eat as many as we can – breakfast, lunch and dinner – and the rest we share with wonderful friends who also love fresh tomatoes but don't have a place for a garden in their lives. Or we trade. I have one friend who grows amazing cucumbers and great peppers – neither of which I've gotten to do well in our soil. So we give her tomatoes, she keeps us supplied with peppers and cucumbers.

Last week we got our observation hives up and running again. One is in the Public Library in the children's section. About five years ago a major renovation was started on our local library and the "powers that be" actually approached Kim about installing an observation hive. I was immediately excited about this project. I love the library. I started taking my kids when they were babies. It was close and we loaded up the stroller and walked at least once or twice a week, sometimes more. Our Medina library has always had an excellent children's section and programs for the kids. There's a lady that has been working in the children's section since the very first time I took my oldest son for story time – he was about a year old and he'll be 27 this month. She seems exactly the same to me after all these years. So I was eager to be able to be back in the library on a somewhat regular basis. The children, parents and all of the folks that work at the library love the bees. It

gets a lot of attention.

The other observation hive we manage is located in the Root Candle store, right across the street from our office. It keeps a little of that beekeeping history around. And the customers and employees also love the bees. It's been amazing to see how well received both hives have been.

We've had a tough time getting them through Winter each year. And in fact this past Winter is the first time both hives have made it through. It's such a stressful environment for the bees. So each year for about five years now we take the hives home, clean them up, start a new, strong bunch and haul them back to their locations. It's a lot of work, but it's fun and a good way to teach a little bit about bees in a safe, comfortable way.

Speaking of teaching beekeepers – there are two big meetings this Summer that you should consider trying to attend. HAS – Heartland Apicultural Society – is holding their meeting July 12-14 in St. Louis, MO. Visit www.heartlandbees.com to see the schedule.

The other big meeting this Summer is the EAS Short Course and Conference – Eastern Apicultural Society. This event takes place August 13-17 at the University of Vermont in Burlington. Many of us are working on the details so around 500 beekeepers – beginning and experienced – will have a great time in Vermont. Please visit www.easternapiculture.org to see the schedule. You'll also find information on hotels, dorm housing, the honey show and lots more. You don't want to miss this one. Hope to see you there.

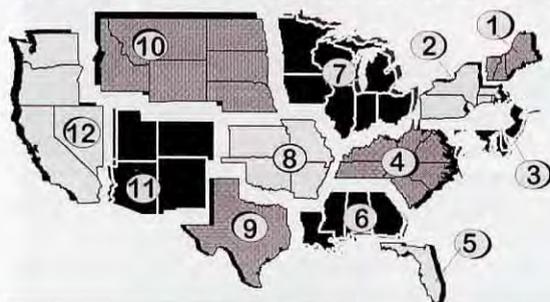
The chickens are doing good. They are now about 11 weeks old and very tame and calm. There are 15 of them, we didn't lose any, all hens and like the tomatoes, all different varieties. I'm having so much fun with them. Each morning they wait for one of us to open the door to their outside pen. Out they go, hopping and flapping their wings, so happy to be outside. They come when I whistle, they sit on my lap or my arm or my shoulder. A couple of them will even nuzzle my neck and pick at my hair. Kim says it's all about the food, and maybe he's right. I'm convinced it's time and effort spent. Like any other living thing, whether it's a chicken or a dog or a little boy. I have found that if you spend enough time and attention they usually turn out pretty good. Not always, but most of the time.

Have a great Summer. Get to one of those meetings if you can. You'll be happy you did.

Kathy Summers



JULY - REGIONAL HONEY PRICE REPORT



Compared To Last Year And Before . . .

It's time for a mid-year review of where prices are going. By now many beekeepers have a handle on what the honey crop will, or at least might be at the end of the season, and those who are careful are adjusting prices to reflect the demand they are seeing, and the crop they have to meet that demand. Early farm market prices this year are up over same time last year, and bulk prices are still rising.

The big regional chart below is the regular monthly chart we produce each issue, but the chart up here reflects the average honey price for each product drawn from our regular report for July '08, '09, '10, '11 and '12 . . . a five year review of mid-year prices.

During these last five years the economy has gone through some significant turmoil, and generally prices for most goods have remained relatively low. Overall, inflation has risen only about 6.7% during that time, according to the Consumer Price Index, calculated by the U.S. Bureau of Labor Statistics.

If honey had held to that fig-

ure then, the price per pound bulk, which is now \$1.76/lb, would have been only \$1.15. The real increase then reflects a 37% increase. I wish my house had the same selling power. But not all products on this chart reflect that same increase. A 60# pail of light honey is up only 40%, the wholesale price of 1# jars is up 58%, a retail bear is up 30%, a retail 1# jar is up over 40%, but pollination, interestingly is flat.

Overall, if you want to do the calculations, you'll see the trend is that bulk prices and wholesale prices are strong . . . averaging somewhere around 40%, give or take. Meanwhile, retail prices have not fared so well. Still, with the rest of the universe dealing with only a 7% increase for most products, honey has done quite well in the last five years.

The big unknown at midyear is what the price of fuel, and labor will do to prices later this year, and how they will affect plans for next year's business - will it be more, or less honey, or more, or less pollination. And that upcoming election will be felt, no matter which way it goes.

MID YEAR PRICES					
	2008	2009	2010	2011	2012
EXTRACTED HONEY					
55 Gal. Drum, Light	1.53	1.56	1.63	1.67	1.76
55 Gal. Drum, Ambr	1.26	1.41	1.51	1.60	1.64
60# Light (retail)	123.22	133.29	135.13	146.23	157.26
60# Amber (retail)	118.75	127.20	126.78	141.97	150.78
WHOLESALE PRICES					
1/2# 24/case	53.96	61.76	58.81	60.96	61.86
1# 24/case	74.33	80.55	77.77	86.31	101.58
2# 12/case	62.18	70.44	70.29	77.12	83.89
12.oz. Plas. 24/cs	60.46	65.31	63.61	71.60	75.59
5# 6/case	74.55	79.60	80.12	85.54	90.49
Quarts 12/case	95.88	102.77	101.74	107.71	121.60
Pints 12/case	65.07	63.08	65.61	67.82	74.54
RETAIL SHELF PRICES					
1/2#	2.87	3.36	3.32	3.62	3.71
12 oz. Plastic	3.59	3.78	3.82	4.07	4.47
1# Glass/Plastic	4.65	4.68	4.94	5.47	5.92
2# Glass/Plastic	7.30	7.55	8.15	8.71	9.38
Pint	6.93	7.46	7.67	8.10	7.78
Quart	10.51	10.26	12.90	14.94	12.58
5# Glass/Plastic	16.28	17.15	19.09	19.07	21.73
1# Cream	5.16	5.67	6.42	5.80	6.52
1# Cut Comb	6.32	7.17	6.83	7.39	7.84
Ross Round	5.99	6.49	6.60	7.50	7.32
Wholesale Wax (Lt)	3.17	3.92	3.55	4.20	3.43
Wholesale Wax (Dk)	2.76	3.59	3.83	3.51	2.76
Pollination Fee/Col.	81.12	68.85	75.80	79.41	75.11

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	1.75	1.95	1.75	1.57	1.88	1.67	1.73	1.65	1.80	1.80	1.78	1.80	1.57-1.95	1.76	1.75	1.67
55 Gal. Drum, Ambr	1.69	1.75	1.69	1.52	1.58	1.56	1.70	1.65	1.60	1.69	1.62	1.68	1.52-1.75	1.64	1.64	1.60
60# Light (retail)	173.75	171.25	149.00	153.25	160.00	150.00	146.86	151.25	160.80	153.00	154.00	164.00	146.86-173.75	157.26	154.17	145.40
60# Amber (retail)	182.50	167.50	149.00	155.60	160.00	141.25	141.67	147.50	100.00	152.15	147.25	165.00	100.00-182.50	150.78	152.26	142.80
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS																
1/2# 24/case	74.76	69.37	49.20	64.40	63.96	53.75	51.37	63.96	63.96	49.92	57.00	80.67	49.20-80.67	61.86	61.80	61.04
1# 24/case	107.11	100.59	103.60	82.44	117.00	96.37	84.91	91.20	107.25	120.80	97.20	110.53	82.44-120.80	101.58	95.08	85.44
2# 12/case	104.20	82.49	75.90	75.00	94.00	79.84	77.77	93.00	94.00	86.16	54.50	89.80	54.50-104.20	83.89	82.41	77.95
12.oz. Plas. 24/cs	95.82	90.35	65.40	74.17	67.00	61.59	67.14	80.00	77.68	64.08	83.40	80.44	61.59-95.82	75.59	75.66	72.44
5# 6/case	124.72	93.41	92.25	81.93	105.00	67.50	80.03	96.75	95.00	88.98	58.34	102.00	58.34-124.72	90.49	92.90	87.21
Quarts 12/case	130.00	145.79	142.80	114.80	96.00	102.00	124.50	106.00	127.53	137.48	103.85	128.50	96.00-145.79	121.60	114.14	107.71
Pints 12/case	80.33	79.65	88.80	70.42	68.00	62.86	78.00	59.70	55.00	111.00	64.50	76.25	55.00-111.00	74.54	71.69	71.99
RETAIL SHELF PRICES																
1/2#	4.55	4.24	3.05	3.66	3.79	3.33	3.11	2.49	4.07	4.13	3.77	4.40	2.49-4.55	3.71	3.37	3.62
12 oz. Plastic	5.17	5.09	3.80	4.21	4.80	4.42	3.74	4.17	4.98	3.56	4.89	4.77	3.56-5.17	4.47	4.28	4.07
1# Glass/Plastic	6.26	6.08	6.40	5.45	6.33	6.17	5.34	5.22	6.20	5.67	5.15	6.80	5.15-6.80	5.92	5.52	5.38
2# Glass/Plastic	11.18	9.66	10.19	9.06	9.80	9.00	8.18	9.31	7.00	9.67	7.76	11.75	7.00-11.75	9.38	9.34	8.62
Pint	7.50	8.36	8.70	7.31	7.25	6.98	10.07	6.64	5.50	8.32	8.27	8.52	5.50-10.07	7.78	7.73	7.93
Quart	14.17	11.80	13.50	11.33	12.50	11.17	12.77	12.44	9.00	14.18	11.73	16.36	9.00-16.36	12.58	12.60	13.28
5# Glass/Plastic	24.70	20.72	22.40	19.95	24.45	19.95	20.43	20.33	24.45	21.89	16.54	25.00	16.54-25.00	21.73	19.76	19.07
1# Cream	6.00	7.49	7.65	6.43	6.86	4.50	6.49	5.44	6.86	6.22	6.79	7.50	4.50-7.65	6.52	6.51	5.80
1# Cut Comb	8.10	5.73	7.80	7.08	9.16	5.50	7.24	6.00	9.16	8.83	8.50	11.00	5.50-11.00	7.84	8.10	7.22
Ross Round	10.00	6.95	7.80	6.08	7.79	7.79	6.00	8.00	7.79	7.79	4.10	7.73	4.10-10.00	7.32	7.32	7.50
Wholesale Wax (Lt)	3.20	3.49	3.85	3.60	3.10	3.68	3.60	3.00	3.99	3.00	3.45	3.20	3.00-3.99	3.43	4.44	4.20
Wholesale Wax (Dk)	3.13	3.65	2.75	3.35	2.90	2.75	2.59	2.75	2.38	2.00	2.92	2.00	2.00-3.65	2.76	3.86	3.26
Pollination Fee/Col.	90.00	90.83	77.50	56.33	80.00	50.00	54.50	75.00	89.65	60.00	80.00	97.50	50.00-97.50	75.11	75.33	79.41



A Closer LOOK



LARVAL CARE & NUTRITION

Clarence **Collison**
Audrey **Sheridan**

Worker larvae are fed primarily brood food produced by the hypopharyngeal and mandibular glands of nurse bees, although some pollen is fed directly to larvae on the fourth or fifth day of larval development.

Honey bees require proteins, carbohydrates, minerals, fats (lipids), vitamins and water for normal growth and development. These nutritional needs are satisfied by the collection of nectar, pollen and water. Nectar, which is collected by honey bees from either floral or extra-floral nectaries of flowers, satisfies the carbohydrate requirement. Pollen, which is collected by honey bees from a wide range of flowering plants, normally satisfies the dietary requirements for proteins, minerals, lipids and vitamins (Herbert 1992).

The nutritional requirements of immature honey bees differ from those of adult bees. Nurse bees consume forager-collected pollen to biosynthesize a proteinacious hypopharyngeal gland secretion called brood food that is progressively provisioned to larvae. It is through nurse bees that larvae are the principal consumers of protein in a colony. The quantity and composition of larval jelly which is provided to individual larvae by the nurse bees differs according to sex, caste and age of the larvae. The larval jellies – royal (RJ), worker (WJ) and drone jellies (DJ) – differ in the ratio of fructose to glucose and in the content of vitamins and proteins (Schmitzová et al. 1998).

Worker larvae are fed primarily brood food produced by the hypopharyngeal and mandibular glands of nurse bees, although some pollen is fed directly to larvae on the fourth or fifth day of larval development. The brood food consists of a clear component from the hypopharyngeal glands, which is presumably mixed with honey, digestive enzymes, and water and a milky white component, which appears to be the mandibular gland secretions with an admixture of the hypopharyngeal gland secretions (Winston 1987). Worker larvae are fed 20-40% from the white component (containing mostly lipid components) and 60-80% from the clear component (mostly protein) during the first two days of larval life. On the third day the amount of mandibular gland secretion fed to developing workers decreases, and the brood food originates mostly from the hypopharyngeal glands; a drop in diversity and quantity of protein occurs at this time (Shuel and Dixon 1959; Patel et al. 1960).

The flow of jelly from 100 nurse bees to the members of two normal-sized colonies was measured during one night. To follow the flow, nurses were injected with ¹⁴C-phenylalanine. This label was incorporated into the protein of their hypopharyngeal (brood food) glands and their own body protein. When

they were allowed trophallactic contacts during the investigation period a loss of label and a shift away from the abdomen was observed, indicating protein synthesis in the hypopharyngeal glands was from previously stored protein (Crailsheim 1992).

A larva is regularly inspected by nurse bees and fed if necessary, so that it is always sufficiently provided with food. The sugar content (fructose and sucrose) of brood food is 18% in the first three days of larval development, then 45% in the last two days (Brodtschneider and Crailsheim 2010). Rortais et al. (2005) calculated that 59.4 mg of carbohydrates are fed to one worker



“A larva is regularly inspected by nurse bees and fed if necessary, so that it is always sufficiently provided with food.”

larva during its development. A lack of carbohydrates limits the number of larvae reared in Spring, when nectar sources are poor and Winter stores already depleted, or after harvesting the honey without adequate replacement of carbohydrates.

Larvae are especially dependent on protein and brood production is strongly affected by shortages of this nutrient. The number of larvae reared may be reduced to maintain the quality of remaining offspring. The quality of developing workers also suffers under conditions of larval starvation, leading to slightly affected workers. Larval starvation, alone or in combination with other stressors can weaken colonies (Brodschneider and Crailsheim 2010).

Schmickl and Crailsheim (2001) observed the impact of bad pollen supply (non-foraging due to artificial rain and pollen removal under poor-foraging conditions) on the survival of honey bee larvae, and on the total development time from egg-laying to the capping of a larval cell. Five days of non-foraging led to cannibalism of larvae younger than three days old and to a shortening of the time until larvae were sealed, but four- and five-day-old larvae survived even worse pollen supply situations. Manual pollen removal and reduction of incoming pollen (pollen trap) induced cannibalism of younger larvae. The larvae's mean capping age significantly correlated with the pollen income: the less pollen was stored by the hive during the larvae's



development, the earlier the larvae were capped. Both behavioral patterns lead to a quick reduction in the amount of unsealed older brood in response to a shortage of available protein. Older larvae have the highest pollen demand, so this strategy compensates for a shortage of supply by reducing demand. Additionally worker jelly gets enriched by protein gained from cannibalism, and the early capping of older larvae saves the oldest part of the brood, which represents the highest broodcare investment.

DeGroot (1953) established that 10 amino acids (building blocks of proteins) must be present in the diet of honey bees for maximum development. The 10 essential amino acids include: arginine, histidine, lysine, tryptophane, phenylalanine, methionine, threonine, leucine, isoleucine and valine. He was successful in demonstrating that if a protein was devoid of any one of the essential amino acids, but otherwise complete, was fed as the sole protein in the bee's diet, brood development was impossible.

To rear one larva, 25-37.5 mg protein (or 125-187.5 mg pollen is needed (Hrassnigg and Crailsheim 2005). Pollen is only fed directly to larvae in a small amount; the majority of protein a larva obtains is processed brood food from adult honey bees. Babendreier et al. (2004) calculated the portion of protein directly derived from pollen to be about 5%. Nurse bees have developed hypopharyngeal glands and the enzymatic equipment to process protein derived from pollen into a high quality larval food (Moritz and Crailsheim 1987) that allows honey bee larvae to grow rapidly. The number of feedings and the food supplied by nurses is adjusted to the age of the larva. Young larvae are visited and fed less often than older larvae (Haydak 1970, Crailsheim 1992, Schmickl and Crailsheim 2002).

The characterization of major proteins of honey bee larval jelly (49-87 kDa) was performed by the sequencing of new complementary DNAs (cDNAs) obtained from a honey bee head cDNA library, by the determination of N-terminal sequences of the proteins, and by analyses of the newly obtained and known sequence data concerning the proteins. It was found that royal jelly (RJ) and worker jelly (WJ) contain identical major proteins and that all the proteins belong to one protein family designated MRJP (major royal jelly proteins). The family consists of five main members (MRJP1, MRJP2, MRJP3, MRJP4, MRJP5). The proteins MRJP3 and MRJP5 are polymorphic. MRJPs account for 82- 90% of total larval jelly protein, and they contain a relatively high amount of essential amino acids. These findings support the idea that MRJPs play an important role in honey bee nutrition (Schmitzová et al. 1998).

Bees require some dietary lipids (fatty acids, sterols, and phospholipids) in their diet as sources of energy, for the synthesis of reserve fat and glycogen and as essential structural components of many cell membranes. Under normal conditions this lipid requirement is satisfied by the consumption of pollen (Herbert 1992).

Honey bees require sterols in their diet for normal growth, development and reproduction. One class of sterols (cholesterol) is essential but since bees are unable to synthesize this component, they must obtain it in their diet for normal development (Herbert 1992). Workers convert ingested phytosterols to 24-methylenecholesterol (the honey bees' major sterol), sitosterol and isofucoesterol (Svoboda et al. 1982). They cannot convert phytoserols to cholesterol. It has been demonstrated that diets containing 0.1% cholesterol or 24-methylenecholesterol supported bee survival and brood production, although honey bees also reared small amounts of brood without any dietary sterols (Herbert et al. 1980). Regardless of the sterols present in the bees' diets, workers have the unique ability to transfer sterols selectively to larvae through brood food and hence maintain fairly consistent levels of 24-methylenecholesterol (Svoboda et al. 1986). This might involve the depletion of the workers' endogenous sterol pools (Brodschneider and Crailsheim 2010).

Five queenright honey bee colonies were divided into equal queenright and queenless subunits, two in the Autumn and three in the Spring. Brood food was measured from a total of 10,850 cells with larvae identified as one, two, three, and four days old. Larvae in queenless subunits received more food than similar aged larvae in queenright colonies (Woyke 1999). In the Autumn, 10 larvae, one and four days old, received on average 12.8 vs. 16.6 mg of food and 145.4 vs. 163.0 mg in queenright and queenless subunits,

respectively. Larvae of intermediate ages received intermediate amounts of food. The largest differences in ratios of food were noted the day after the subunits were formed. In queenright colonies, larvae of all ages received 124% of the nourishment received in queenless colonies. With time, the amount decreased to 108%, the sixth day after dequeening. In the Spring, 10 larvae, one and four days old, received an average of 32.1 vs 43.9 mg of food and 126.3 vs. 144.7 mg in queenright and queenless subunits, respectively. Again, the largest differences in ratios of food were noted the day after the subunits were formed. In queenright colonies, larvae of all ages received 175% of the nourishment in queenless colonies. The largest increase of 201% was recorded in cells with one-day-old larvae, the next day after dequeening. As time passed, the relative food amount in queenless colonies decreased to 105% the seventh day after dequeening.

Honey bee larvae are frequently inspected and, sometimes, provided with food by adult workers, but the stimuli that elicit the important task of food provisioning have never been investigated. Larvae with their food experimentally deprived received more frequent inspection and feeding visits from nurse bees than normally fed larvae, suggesting that there could be a "hunger signal." Food-deprived larvae with artificially supplied larval food received the same feeding rate of feeding visits from nurse bees as did normally fed larvae but still received more inspection visits. These results suggest that stimuli eliciting feeding are different from those for inspection. They also support the hypothesis that worker bees deposit food in a larval cell only when the quantity of food is below a certain minimum threshold that is perceived during larval inspections (Huang and Otis 1991).

With an increased understanding of larval feeding behavior and nutrition requirements, a new and simple technique has been developed to rear honey bees *in vitro* (Latin: in glass; experiments done in a cell-free system). One day old larvae were grafted into Petri dishes and fed a basic diet at six different time intervals. There were no differences in the larval weights, survival rates or ovariole numbers of the bees among the groups that were fed at different intervals, but they were heavier and had larger ovaries than hive reared bees. It was shown that honey bees can be reared *in vitro* without replenishing their food daily. This simple mass provisioning technique reduces the labor involved, and enables the researcher to raise large number of bees *in vitro* (Kaftanoglu et al. 2010). **BC**

References

- Badendreier, D., N. Kalberer, J. Romeis, P. Fluri and F. Bigler 2004. *Pollen consumption in honey bee larvae: a step forward in the risk assessment of transgenic plants*. *Apidologie* 35: 293-300.
- Brodtschneider, R. and K. Crailsheim 2010. Nutrition and health in honey bees. *Apidologie* 41: 278-294.
- Crailsheim, K. 1992. *The flow of jelly within a honeybee colony*. *J. Comp. Physiol. B.* 162: 681-689.
- DeGroot, A.P. 1953. *Protein and amino acid requirements of the honey bee*. *Physiol. Comp. Oecol.* 3: 1-90.
- Haydak, M.H. 1970. *Honey bee nutrition*. *Ann. Rev. Entomol.* 15: 143-156.
- Herbert, E.W., Jr. 1992. *Honey bee nutrition*. In: *The Hive And The Honey Bee*, (Ed. J.M. Graham), Dadant and Sons, Hamilton, IL, pp. 197-233.
- Herbert, E.W., Jr., J.A. Svoboda, M.J. Thompson and H. Shimanuki 1980. *Sterol utilization in honey bees fed a synthetic diet: Effects on brood rearing*. *J. Insect Physiol.* 26: 287-289.
- Hrassnigg, N. and K. Crailsheim 2005. *Differences in drone and worker physiology in honeybees (Apis mellifera L.)* *Apidologie* 36: 255-277.
- Huang, Z.-Y. and G. W. Otis 1991. *Inspection and feeding of larvae by worker honey bees (Hymenoptera: Apidae): Effect of starvation and food quantity*. *J. Insect Behav.* 4: 305-317.
- Kaftanoglu, O., T.A. Linksvayer and R.E. Page, Jr. 2010. *Rearing honey bees (Apis mellifera L.) in vitro: Effects of feeding intervals on survival and development*. *J. Apic. Res.* 49: 311-317.
- Moritz, B. and K. Crailsheim 1987. *Physiology of protein digestion in the midgut of the honeybee (Apis mellifera L.)* *J. Insect Physiol.* 33: 923-931.
- Patel, N.G., M.H. Haydak and T.A. Gochnauer 1960. *Electrophoretic components of the proteins in honeybee larval food*. *Nature* 186: 633-634.
- Rortais, A., G. Arnold, M.-P. Halm and F. Touffet-Briens 2005. *Modes of honeybees exposure to systemic insecticides: estimated amounts of contaminated pollen and nectar consumed by different categories of bees*. *Apidologie* 36: 71-83.
- Schmickl, T. and K. Crailsheim 2001. *Cannibalism and early capping: Strategy of honeybee colonies in times of experimental pollen shortages*. *J. Comp. Physiol. A* 187: 541-547.
- Schmickl, T. and K. Crailsheim 2002. *How honeybees (Apis mellifera L.) change their broodcare behavior in response to non-foraging conditions and poor pollen conditions*. *Behav. Ecol. Sociobiol.* 51: 415-425.
- Schmitzová, J., J. Klaudivny, Š. Albert, W. Schröder, W. Schreckengost, J. Hanes, J. Júdová and J. Simuth 1998. *A family of major royal jelly proteins of the honeybee Apis mellifera L.* *Cell. Mol. Life Sci.* 54: 1020-1030.
- Shuel, R.W. and S.E. Dixon 1959. *Studies in the mode of action of royal jelly in honeybee development*. *Can. J. Zool.* 37: 803-813.
- Svoboda, J. A., E.W. Herbert, M.J. Thompson and M.F. Feldlaufer 1986. *Selective sterol transfer in the honey bee: Its significance and relationship to other hymenoptera*. *Lipids* 21: 97-101.
- Svoboda, J.A., M.J. Thompson, E.W. Herbert, T.J. Shortino, P.A. Szczepanik-Vanleeuwen 1982. *Utilization and metabolism of dietary sterols in the honey bee and the yellow fever mosquito*. *Lipids* 17: 220-225.
- Winston, M.L. 1987. *The Biology Of The Honey Bee*. Harvard University Press, Cambridge, MA, 281 pp.
- Woyke, J. 1999. *Increased food supply to all larvae after dequeening honey bee colonies*. *J. Apic. Res.* 38: 117-123.

Clarence Collison is an Emeritus Professor of Entomology and Department Head Emeritus of Entomology and Plant Pathology and Audrey Sheridan is a Research Technician at Mississippi State University, Mississippi State, MS.

DIFFERENT ROADS

*There are lots of ways to get
almonds pollinated.*



Moreland's orchard plantings covered acres and acres, every other row

Kim Flottum

Two things came up during the Almond Odyssey that I knew of but didn't fully appreciate. The first we've discussed at length – enough good food for honey bees before, during and after pollination to increase the diversity of their diet. And the second was different bees.

We looked at one aspect of the enough-food issue early on when we mentioned Paramount Farming's move to provide forage after pollination while bees were readying to move out. There is, near Paramount's holding yards, vast acres of uncultivated land and every Spring after almond bloom mustard grows and blooms and would be ideal for bee forage. But it gets plowed down because it uses water the land owners want for other crops – recall that Paramount

Farming is near Bakersfield, the driest portion of the valley with less than six inches of water a year. But just recently Gordon Wardell, Paramount's bee guy has convinced at least some of the land owners to let that mustard stay until it's done blooming so the bees can take advantage of it. So there's some good food for some bees for awhile.

But another grower has taken direct action to provide good food for pollinators in his orchard.

Dave Moreland grows grapes, about 600 acres of almonds, runs about 3000 colonies of bees and has a solar array on some of his land that he runs as Moreland Farms not too far from Modesto, north of Bakersfield and not quite as shy of water. They use bees for almonds and other crop pollination in California, and there is a crew to manage them when they are home. When pollination is over they head out to North Dakota where a beekeeper there leases them for honey production and keeps half the crop when the season is over – a not uncommon practice.

But Dave started another company called Ag Pollen, looking at almond pollination from a different

perspective. He began by planting a new almond orchard next to an established orchard. Then he hired an experienced alternative pollinator expert, Steve Peterson, to put together a program using Blue Orchard Bees (BOBs). Steve came with extensive experience with both alfalfa leaf cutter and BOBs from his job at International Pollination Systems in Canada, so felt right at home – because though he moved from Canada to the Modesto area, he had finished his grad work in Davis just up the road – so it was almost coming home. Before that both he and I had been in the Entomology department at the University of Wisconsin in Madison about the same time back in the early 80s, so our initial conversation wasn't about BOBs but rather catching up and do you remember and what happened to – interestingly I had several of these out of orchard experiences while in California – one advantage of having been around as long as I have I guess.

But Steve's role here is to provide BOBs to this relatively small old orchard for pollination as a trial to see how it works, and what kind of nesting boxes worked best to attract



Steve Peterson examining one of the rows of flowers planted for bee food.



A Blue Orchard Bee, watching the photographer.

nesting females. The day we met he had just finished releasing about 500 adult females into the old 18 acre orchard. They had been dormant until there were enough almond blossoms to both support the bees and get enough almond blossoms pollinated. He had already hung his nesting boxes in the orchard – looking at several models, arrangement and density in the orchard. It was, as I said, a small experiment, but one worth watching. Of course the effectiveness of the BOBs was being measured, as was the density of bees in an orchard this size. How many do you need to effectively pollinate almonds is the experimental question being asked by several growers.

But Steve and Dave had another research project going on – feeding those bees, and other bees in the area. There isn't much to eat if there isn't almonds blooming in an orchard, so the plan was to plant some supplemental forage for the bees, both honey bees and BOBs – but where?

Well, between rows seemed like a good idea. Near Modesto water isn't quite the rare commodity it is in the Bakersfield area so squeezing a little out would work. So between rows in this 200 acre brand new orchard they planted a host of bee friendly plants – Baby Blue Eyes, 5 Spot, California Poppies, Phacelia, California Bluebells, Fiddleneck, Lupine – and several more. Project Apis m purchased the seed for this trial, and they planted six rows of flowers between every other four foot row of trees. Between the others there was grass. The flowers had been planted the previous Fall and were starting to take off when we visited in February. With that spacing they ended up with 18 acres of flowers in the orchard, taking up virtually no extra space at all.

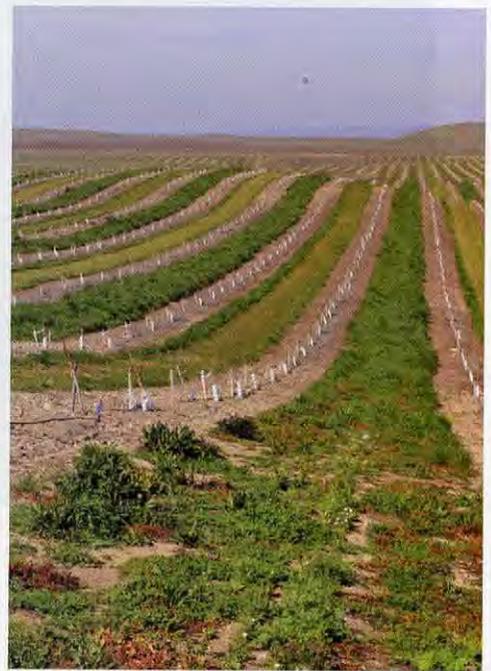
The goal, of course is to release the females, have them mate and then nest in the boxes provided in the orchard. Is it a sustainable project? Is getting back half of the 500 females an efficient use of resources – or at least more efficient than using only honey bees?

Certainly others are looking at this same aspect of pollinating almonds. Quick to point out it is only experimental, Paramount Farming's President Joe MacIlvaine and Gordon Wardell discussed their similar,

but much larger program with blue orchard bees, or Mason bees as they are sometimes called.

They have a large rearing facility established on an old apple orchard site with outbuildings and barns. In the barn they have controlled temperature holding rooms to finish the rearing process during the Winter. When the time is right they harvest the pupae and keep them at the right temperature and humidity until ready to release in the experimental orchard they are using for the test.

And then it happened again. I walked into the barn and there stood Matt Allen, an old acquaintance from the UK. Matt had been the editor of one of two magazines published by Northern Bee Books a few years back. One was more sideline and hobby based called the Beekeeper's Quarterly, and Matt's magazine looked at the practical side of commercial beekeeping. After a few years it was rolled into the Quarterly and Matt went on to work for Pacific Pollination, a company that produces various kinds of bees other than honey bees for specialized pollination work. Based in Arizona, Gordy had hooked



Food for pollinators is planted between every other row of these newly planted almond trees. The other rows are grass kept mowed quite short.

she emerges she is ready to mate. Males emerge a few days earlier because they need a few days to mature. After mating, the females find

Feeding Bees Before & During Pollination Is A Practice That helps Bees, Beekeepers & Growers

up with them to help with this project and Matt was the person in charge of raising thousands of female bees, on time and healthy, ready to mate and fly and pollinate almonds on command.

A quick review of the BOB life cycle. A mature virgin female BOB emerges from her nest in the Spring. She has spent most of last Summer and all Winter as a pupa and when

nesting blocks placed in the orchard – simply blocks of wood or groups of tubes with 3/8 inch holes about six inches deep. The females will forage for nectar and pollen, return to the nest to place a nectar-enriched pollen ball in the back of the drilled hole or tube and lays an egg on the pollen ball. Once laid, she builds a mud wall (hence the Mason bee name) in front of the ball and repeats the process,

Dave Moreland dedicated a chunk of his orchard to this solar array. Each was programmed to follow the sun all day, and if you stood near them you could hear the motors constantly moving the face to keep it fully exposed.





One of the nests Steve uses, a wooden block that comes apart.



– Joe MacIvaine, President of Paramount Farming Company explaining the holdings of the company – citrus, pomegranates, almonds.

provisioning each new cell with pollen and nectar for the egg she leaves. When nearing the entrance her eggs become male instead of female so the males can exit first next season. The eggs of course hatch and the larvae consume the pollen through several molts, then spin cocoons and pupate, slowly maturing until next Spring.

do the job of pollination. Of course you need males too, but those come with the females. During the previous Summer Gordy had constructed a five acre tent and planted five acres of food for thousands of females to feed on. The schedule was to get the food plants blooming, place male and female pupa into the tent, let them

emerge, mate and produce the next generation of females and males to be harvested later, examined and held in storage until almond bloom next year. The food – *Phacelia tanacetifolia* – is nutritious and sought after by the females and provides a balanced diet for the larvae.

They were just finishing hanging nest boxes in the 160 acre trial orchard when we arrived. The USDA Bee Lab in Logan had scientists there too, since this is certainly one of the biggest experiments of its kind. They were testing nesting box designs, spacing intervals, height off the ground, population of females per acre, and an attractant to get females to nest in the boxes they provided. The jury is still out on results as I put this together, and everybody was quick to say this is just the beginning, but it was a good example of practical research in practice.

One interesting note that came out of this was research Frank

Independence - It Still Needs Bees

When her nest is full the female is pretty much worn out, having spent several weeks doing all the work – foraging and in the process pollinating hundreds of almond blossoms, building mud walls and laying eggs. She perishes shortly after completing her nest. The nest boxes are then

collected and the pre-cut blocks or groups of tubes are separated and the pupae removed. They are examined for parasites and diseases and placed in those temperature and humidity controlled rooms until next spring.

Outside the barn was the most impressive aspect of this test. To raise BOBs you need food, to raise enough BOBs for a large scale experiment you need lots of food. And thousands of females are needed to



A series of boxes strung out on a row of trees.



One of the USDA scientists applying an attractant pheromone to get BOB females to nest in their box.



A BOB nesting block with the top half removed, showing the tunnels the females make their cells in.



Trays and trays full of dormant pupa held in the temperature and humidity controlled holding room.

All photos by Kodua Galletti.

Eischen, USDA Researcher from the Weslaco Bee Lab who has been examining nearly every aspect of almond pollination for many years, had done previously on a hybrid pollination project – using both honey bees and BOBs. He found that, interestingly, when the BOB nest boxes were placed right near the drops of beehives, the honey bees traveled some distance before they began foraging, while the BOBs stayed close to home, thus

doing work the honey bees missed. It's assumed that honey bees from a distant drop would have done the pollinating near the first drop, but as far as I know that hasn't been tested.

We examined one more different road when we had the chance. *Independence* – the self fruitful almond variety – the only self fruitful almond variety commercially available so far. The initial noise about this almond was that it was the beginning of the end of the gravy train beekeepers were on relative to those lucrative pollination fees. But no, that isn't the case. Almond blossoms, like apple blossoms, need pollen from a different variety to set fruit. Pollen from its own tree, or a tree of the same variety won't work – no fruit will set. But cross a Delicious with a Macintosh and you've got an apple. The same with almonds – which is why all those air photos we took show so dramatically the difference in blooming rates of the different varieties – almonds absolutely have to have another variety that blooms at the same time

so they can be visited by bees with different pollen. *Independence*, however, is perfectly happy with pollen from flowers from the same tree, or another tree from the same variety. You can see the advantage this would give a grower who no longer has to worry if those trees will bloom at the same time. But even so, they need bees to do the transferring. So, bees are still in the picture. Until someone develops a self-pollinating, self-fertile almond variety – bees, beekeepers and almond growers are all still in business together. **BC**



Gordon, Kim and Matt Allen (far right) in the office of the BOB rearing lab at the old apple orchard.



Home of the Independence Almond.



Inside the five acre tent in February, before bloom.



Gordon Wardell, from Paramount and Meg Rigelleto and Christi Heintz from Project Apis m in the tent during bloom.

Planning A Beekeeping Business

Dan Conlon

We begin this month with the first of a three part series on Starting, and Profitably Running a beekeeping business. Dan and Bonita Conlon run Warm Colors Apiaries in Massachusetts. They make and sell honey, pollinate local orchards and farm crops, make candles and other hive products, sell packages and queens and sell equipment. Generally, they do everything a successful beekeeping business does and should do. But more importantly, they bring a lifetime's experience in Professional Business Management, plus more than 40 years experience keeping bees...keeping bees alive and healthy. This combination is rare in our industry. We are pleased to offer their advice and consul. You would be wise to use it as much as possible if you are planning to grow in this business.

We start this month with the basics in Phase 1...Getting Started. Permits, fees, business plans and the like. Next month is Phase 2, Developing Customers and Markets, followed by Phase 3, Growing Your Business. If you are thinking of beginning a business in bees, or expanding the operation you have now, you will not find a better primer for getting started, getting better and getting bigger.

Introduction

Most of us entertain the thought of earning money from our beekeeping. It is a simple matter to produce a few supers of honey, bottle it, and put a label on the jar. We sell to friends, co-workers and neighbors. This is a typical activity for most backyard beekeepers. The hope is to earn back a bit of the money spent on bees and equipment. In business language, this is a "Vertically Integrated System." The backyard beekeeper produces, harvests, and markets products directly to customers. This allows the beekeeper-producer to keep a greater share of the value for their honey. The do it all system can also describe the sideline honey producer. It can look deceptively easy to a new beekeeper. If you can make a few dollars with six or ten hives then a hundred hives will multiply those profits ten-fold. Buy more hives, produce more honey, and make more money. Easy math until you add all the additional costs, potential losses, and competitive variables to the equation. Operating your Apiary as a business requires generating enough income to cover operating costs, and pay you a livable salary. To be successful in any business you must understand your financial situation, budget for expenses, find your customers and markets, and have a plan to guide and measure your progress.

When we opened Warm Colors Apiary, in 2000, the economy was strong. I had left an administrative position on the faculty of a private school, bringing 25 years of experience scheduling labor, and forecasting budgets. I had also been a beekeeper for 45 years. Most of that time, I kept a few colonies, and prior to becoming a full-time beekeeper had been managing a hundred or more as a sideline business. When over wintered hives were strong I would sell nucs, rent colonies for pollination, and of course sell the surplus honey. These continue to be the primary activities of my beekeeping, along with a few products to increase the value of our honey and beeswax. It was not a stretch to combine my business experience with beekeeping. I was able to draw on past work experience, and apply it to planning my apiary business.

As we review some of the tasks and strategies for developing a successful business, I have omitted man-

agement of the bees. Anyone considering beekeeping as a business should first be capable of maintaining healthy and productive honey bee colonies. Selling honey and finding markets in the Northeast, is actually the easier activity in this business. Maintaining strong colonies that can produce surplus honey and a consistent annual yield is the hard part. Assess your skills honestly, while strengthening those areas that need improvement and include them in a detailed business plan. My rule is never spend money without an understanding of its benefit. I actually think in terms of how many jars of honey I must sell to cover an expense.

You may be thinking why consider starting a business in today's uncertain economy. The simple answer is that, like beekeeping, business is local and even with the loss of jobs many local businesses are showing a profit. The uncertainty of tax changes, threats of new regulations and the risk of failing do discourage investment by business owners. In agriculture, many are reporting record profits. The U.S. Secretary of Agriculture, Tom Vilsack, recently



pointed out that U.S farm exports have increased by 32 billion dollars from 2010. We add 8400 U.S. jobs for every billion dollars in exported commodities. One in every 12 jobs is directly connected to agriculture. Farm income has increased by 28 percent over the last four years. This continues to benefit U.S. consumers by keeping food prices at seven to ten percent of our income. The lowest in the world when compared to the twenty to twenty-five percent in other developed countries. This financial view is a positive argument for entering an agricultural business. Beekeepers are among those required agricultural jobs because they provide pollination services for almonds, blueberries and cranberries. These are among the crops being exported by U.S. growers.

On the home front, beekeeping fits into this agricultural picture as well. We often complain that honey imports have been undermining domestic honey producers. Low priced imported honey is in direct competition with U.S. producers, but just as important is a lack of domestic honey. This seems to drive the need for imports. The decline in U.S honey production over the last five years (2009 and 2011 being the worst years on record - USDA) has used up any inventory held by beekeepers. Honey packers and companies that use honey in their products make up the difference by buying imported honey. 2010-11 was a poor honey year for world producers and this has created shortages. Since demand for honey has not fallen at all, countries are keeping more of their crop for their local markets, and raw honey prices in the world market continue to rise. Locally we have never seen prices or demand for honey this high. If you can produce honey, selling it at a profit should not be a problem. Honey demand and prices are up, while supplies are low. This is an ideal environment for starting a beekeeping business.

So let us look at some of the considerations for operating an apiary. We will use one hundred colonies for the purpose of evaluation. Again, I am assuming you have the experience to keep these colonies in good health. That is not the focus of this particular article. The equipment and bees represent a \$25,000 to \$30,000 investment, excluding the labor it took to get them to a productive size. Equipment will last ten years or more, and you should plan to replace 20 percent of your bees annually from Winter loss, or other problems. If you are losing 30 percent or more then it becomes difficult to maintain honey production. You can probably replace your bee losses with nucs and splits from over wintered colonies, but they will not produce enough surplus honey to be profitable until their second season. I spread the costs over 10 years, and budget for replacement expenses. My estimate for the annual maintenance cost of hives and bees is in the range of \$30 to \$35 hundred per hundred colonies. This is a starting point for evaluating your financial needs. In business if you spend money, you need a plan to recoup your investment and earn some additional income. If you agree with my estimates, then this means you must earn \$30 to \$35, income, from each hive just to cover costs. These costs are for running your apiary, not wages or operating expenses to run your business.

Projecting income from one hundred hives comes from three activities; honey production, pollination, and beeswax. In the Northeast, the USDA estimates 50-60 pounds of honey per colony. In bulk (60's) you can

probably get \$2-2.50 per pound or \$123 per hive. Case sales to stores at \$4.50 a pound can result in \$247.50. Selling direct under your apiary label at \$7.00 a pound and you might generate \$385 per colony. See why that "do it all yourself", vertically integrated system, is a good model for the small apiary owner. Again these numbers are estimates of gross sales and do not include the labor, packaging and distribution costs you also need to include in your selling price.

Pollination for a small apiary is a good spring and summer activity and can bring in cash at a time many of us have a way to go before harvesting a new crop. We rent our hives to fruit growers in May and field crop growers in June. We also rent pairs of hives to hobby farmers at a higher rate. Our fees are \$50 to \$100 per hive. Rental fees are set according to the number of hives moved, distance from the apiary, and the risk to the bees. Risks include black bear damage and using sprays that harm the bees. We work with the same farms each season and have a

I'm assuming you have enough experience to keep 100 colonies alive and in productive health.

good relationship with our growers. I strongly advocate that you have a written agreement to start your pollination service with a new grower. Write out what you will do, what the farmer will do, and specifically how you will receive payment for the work, or accidental loss of bees and equipment. If you decide to venture into pollination then do your homework on the crop(s) you will pollinate. The one guarantee a farmer wants from a beekeeper is to deliver the bees on time when the first bloom opens. I never try to rent all my hives, as all the orchards typically want the bees during a short period in May. I have a week to move them into the orchards, and often less time getting them out before spraying begins. A second reason is that I never know how many strong hives will be ready early in the season. Do not promise more than you can deliver or you will be out of this business in a very short time. Depending on the number of farms, and types of crops in your area you can earn three to six thousand dollars per season, and you keep any honey.

Light, chemical free beeswax is a valuable product. We get it from cappings, and by melting old comb. We have a profitable beeswax candle business so we no longer produce what we need and must buy from other beekeepers. We have a very good source and pay a little more than bulk price, but it is clean and it comes from a dependable beekeeper. Cleaned wax sells for \$4.50-5.50 a pound. A hundred honey producing hives will give you one or 200 pounds tops. You can sell nice wax rather easily by the pound to individual customers. We sell ounce bars for \$1.25 and pound blocks for \$15. So if you sell in bulk add \$500 to your estimated income. Sell it direct, by the pound, and you can up the income to \$1500.

What can you expect from 100 healthy hives?

Honey gross sales	\$12,375.00 - \$38,500.00
Pollination	\$3,000.00 - \$6,000.00
Beeswax	\$500.00 - \$1500.00
GROSS INCOME	\$15,875.00 - \$46,000.00

Obviously, these numbers are not going to be the same for everyone. In our business and based on ten years of recordkeeping I consider these reasonable for my apiary. I have also watched honey prices & many costs double during the last 10 years. The point of this exercise is that how you sell has a direct impact on gross income. As we continue, the cost of how you sell products also has a direct impact on the actual income you will receive. You have heard the expression “buy low and sell high,” well I prefer “keep operating and production costs low, and sell in the most profitable markets.”

Phase I. Planning and Registering a Business

Write a Business and Marketing plan.

Starting a business involves several phases to move it forward and reduce your financial risks. First is the “The Business Registration & Planning phase” where you collect information, decide how you will run the business, and project financial goals. You make it a legal business by registering with the state and Federal authorities. Next is “Growth & Operation” where you build the business, find your customers, develop markets, and match production with sales. This is when you move from spending to earning enough revenue to show a profit and take a salary. The final phase is “Business Maintenance & Increasing Profits.” A productive business needs maintenance, and improved efficiency to grow. This is when you find an optimal level of production, stay competitive in your markets and increase the percentage of product value you get to keep. Each of these phases has some basic activities that can make your bee business a success. The activity of operating a business has no guarantees, but your approach to business can reduce your risk of failure and financial loss.

The first step in operating a successful business is to write a Business Plan. A researched and detailed Business and Marketing Plan will provide guidance to build the business, and to identify measurable goals from which to evaluate your progress. There are computer programs available, many on-line sources, and government booklets to help you write and start a small business. Take advantage of these resources, many are free, and investing the time working through your plan will save you time and money later. This is an exercise for determining the potential success of your business. If it does not work on paper, then it will never work, unless you adjust your plans. A suggestion that I find helpful is to under estimate business income, and over estimate the expenses. This builds in a buffer that compensates for slight errors in your calculations. Another suggestion is that you should review your plan often and make adjustments as you begin tracking actual costs and sales. I review my expenses and the cost of supplies several times a year, and when necessary increase my prices to reflect changes that directly add to my cost to produce and market them. The Business Plan will help you forecast the financial changes this price adjustment will make to profits and sales. One critical piece to your plan should be how long before you make a profit. Any startup business will take three to five years before you show a profit. It costs to produce honey, develop loyal customers, and pay your monthly bills. Anticipate paying out more then you can sell for three years – this is phase I.

Income from 100 colonies comes from honey production, pollination and beeswax.

Register your Apiary Business and name.

After you have planned the details of your business, it is time to register your apiary with your local town clerk, state Department of Revenue (DOR), and the U.S. Internal Revenue Service (IRS). Registering your business is when you apply for the necessary identification numbers and permits required to open financial accounts, sell products, and pay taxes.

The most important decision you will make is to name your business. This is your public calling card and it can be memorable, or it can be forgettable. Choose a name that says Who, What and Where you are to potential customers? Use words like apiary, honey bees, or bee farm. To make it specific use your name or a word that represents a local or regional icon. This will become your brand and as you build your reputation a name recognized by your customers. Goggle your business name to confirm it is not a duplicate bee business. Also, register your domain name for the website you will eventually need, and setup an email using the name. Using your label name for email and website addresses is an easy way for customers to remember how to contact you. If you have not searched for your business name on-line or checked with your state DOR for other businesses already using it, do it now. Duplicating an existing name can create problems. As you become known, there may be a need to change your name losing the name recognition you have built up, or if the other business has a poor reputation it can rub off on you. Either way it is not smart to knowingly enter into a business using an established name.

Go to the SBA.gov website. This is where you will find information for Small Business' and Self-employment. Find the page “Steps to Starting a Small Business” and follow the small business checklist. This will explain the practical considerations for selecting a business struc-



Bonita moving hives.

ture, choosing your tax year, and the accounting methods accepted by the IRS and state agencies. You will find a daunting list of taxes paid by the small business owner. Read the instructions carefully and find help if you get stuck. This exercise prepares you to complete the forms correctly. What you put on paper is what counts with government agencies. Tax agents are helpful before you make a mistake, and inflexible when you owe a penalty.

You will also want to check in with the IRS, and apply for an Employer Identification Number or EIN. You may not have employees yet but this number is used for other applications and you will need one as an identification to conduct business.

Similarly visit your State's Department of Revenue website. There is also a section on starting a business. Nearly all the state sites provide a checklist that include requirements specific to the state. These checklists guide you through the red tape, and there are miles of forms and government regulations for business owners. Fortunately, not every rule will apply to your bee business. You do need to know what records to keep, what regulations to follow, and as an agricultural business which of them do not apply. In Massachusetts, we have regulations for just about everything but there are many incentives for farms, that also help beekeepers. A visit to your state Department of Agriculture website or office should connect you with an advisor.

You register your Business with your town clerk, and state department of revenue. You must have a State and Federal tax number and an employee identification number (EIN) to pay taxes. You need these identification numbers to set up bank accounts and credit accounts with other businesses. Specific requirements vary from state to state so check with your State's Department of Revenue. There are very few charges to register as a "sole proprietorship". Filing fees for corporations can cost hundreds to thousands of dollars depending on the state. I suggest you start with your state department of revenue and town offices to determine fees and permits for your business. Visit your State Government's Website and you are likely to find instructions for starting a business, and the forms, permits and fees associated with the type of

business. In Massachusetts beekeeping is agriculture, and our apiary regulations and laws are under the Massachusetts Department of Agricultural Resources (MDAR). At this point, you can finish registering your business with your State Department of Revenue, and town or county office. I pay \$20 to register my apiary as a DBA (Doing Business As) and get stamped copies of my Business Certificate from the town clerk. In Massachusetts, there is a penalty for conducting business without registering in your town of residence.

Business Identification Numbers You will need:

EIN Employer Identification Number – Federal IRS

Sales and Use Tax Registration Number – State Department of Revenue, This authorizes you to collect sales taxes for the state DOR. In Massachusetts, this includes non-food items.

Business Tax ID, or your Social Security Number – This is your identification when filing State & Federal Taxes. Your business structure (Corporation or Sole Proprietor) will determine if you should use a SSN or have a business ID.

Exempt Use Certificate – In Massachusetts, we use Form ST-12. You give this to other business' to receive an exemption on sales tax for purchases you use to produce or manufacture products. When you sell a taxable product (equipment & supplies) to another farm, or business, you must have one of their "Exempt Use" forms on file, or you are legally obligated to collect the sales tax.

Business Certificate – You receive it from the Town (township or County) where your resident apiary is located. Setting up accounts with other businesses to receive wholesale or reduced prices often requires proof that you are a legitimate business. I have used these to open financial accounts, establish credit for Warm Colors Apiary, and prove to vendors we are really in business.

Next month we'll explore the different markets you can sell to, developing your various customer bases, and examining the profit ability of each. **BC**



SUMMER and FALL QUEENS
PENDELL APIARIES
Ph: (530) 963-3062

Cordovan Italian Queens

- Mite Resistance
- Gentle
- Honey Producers
- VSH Trait
- Isolated Mating Yard
- Hygienic

Frank & Sheri Pendell
Fouts Spring Rd
P.O. Box 40
Stonyford, CA 95979

Orders only: 877-963-3062
Fax: (530) 963-3063
fpendell@stonyford.com

Call for pricing.

Reporting Pesticide-Related Colony Die-Offs

By Forging Close Alliances with unsuspecting Beekeepers, Bayer CropScience Is Taking A Page Right Out Of Sun Tzu's Classic Book *The Art Of War*, Which Encourages Military Strategists To "Keep Your Friends Close, And Your Enemies Closer."

Ross Conrad

Lately it seems that new studies revealing how lethal pesticides are to bees, even when label application instructions are appropriately followed, are being released every other month or so.* Whether we are talking about miticides used by beekeepers or agricultural pesticides used by farmers, honey bees are all too often taking the brunt of the collateral damage inflicted by these chemical weapons. A focus of concern has been the relatively new family of systemic pesticides known as neonicotinoids produced by corporations such as Bayer and Syngenta. Of particular interest has been the revelation that the pollinator field study, required by law and conducted by the chemical manufacturer Bayer CropScience, was referenced by the U.S. Environmental Protection Agency (EPA) in its approval of the release of the product Clothianadan into the marketplace even though the study is scientifically meaningless (Tom Theobald *Bee Culture* July 2010). Two years have gone by and neither the EPA nor Bayer have acted to correct this information deficit. Meanwhile, beekeepers who see the undesirable results of the better living through chemistry ethos in their apiaries continue to struggle with how to respond appropriately to the poisoning of bees in their care.

Many Causes of CCD

The current consensus within the scientific community regarding the cause of Colony Collapse Disorder (CCD) is that it is caused by multiple factors. I like to refer to them as the five "P's": Pests (mites, beetles, etc), Pathogens (Nosema, viruses, foulbrood, etc.), Poor nutrition (artificial diets and monoculture cropping), Progeny (inbreeding), and Pesticides have all been linked to the latest honey bee losses. Beekeepers and the agricultural community are responding on many fronts. Research into mites and diseases have increased resulting in numerous management suggestions and various treatment options being made available through the marketplace all of which have inspired beekeepers to change many of their practices. Farmers and orchardists are responding and beginning to set aside acreage to provide diverse forage for honey bees and other pollinators. Genetic material is being imported and breeding programs initiated in order to increase the gene pool of the honey bee in North America. But when it comes to pesticides, nothing of substance is taking place to change the status quo. The fact that CCD can be traced to a multitude of factors is being used as an excuse to *not* do anything to interfere with corporate profits by addressing the problem of lethal and sublethal

honey bee poisoning from the manufacture and use of systemic pesticides.

Out of Sight, Out of Mind

For many, speaking up about the pesticide poisoning of hives creates an uncomfortable social situation. If the beekeeper is using miticides in the hive themselves, given the established sublethal effects of approved miticides on bees both when used alone and in combination with other chemicals, a situation is created where the pot ends up calling the kettle black. This in itself is enough to prevent many poisoning incidents from being reported.

Even those who don't use chemical mite controls may find themselves in a situation where the pesticide applicator may be working for, or even be, their friend or neighbor. While one may choose to approach such a neighbor or friend to discuss the matter and try to reach a mutual understanding, there is little that can be done in the way of convincing a person to change their approach if they are uncooperative. This is especially true if label application instructions have been followed and the force of law is on their side. Combined, these factors alone prevent many pesticide kills from being reported. This is an unfortunate situation since the lack of reports of pesticide poisoning of honey bee hives creates the impression among regulatory agencies that there is no problem. This situation has to change and this is where your efforts are important.

Reporting at the State Level

For most of us, state agencies and regulators are more accessible than their federal counterparts in Washington. A call to your state bee inspector can often be helpful in providing support when investigating a pesticide incident in an apiary. In recent years many states have been reducing or eliminating their bee inspections programs due to budget cuts. There are however, numerous state run apiary inspection and support programs still in place throughout the country. If your state has a pesticide incident reporting system in place, use it as well.

According to the National Honey Bee Advisory Board (NHBAB), some state investigators for one reason or another strongly discourage filing of incident reports or act negligently when investigating timely reports. Some state pesticide officers are reportedly discouraging or refusing to test samples for pesticide residues citing the high costs associated with testing. The NHBAB also has indicated that many states take no enforcement action in

response to confirmed bee die-offs from pesticides claiming that label directions are vague and unenforceable, and that such incidents are often not reported to the EPA Ecological Incident Information System (EIIIS) database since such reporting is not required. Depending on the state you live in, you may have to have samples tested and report the results yourself if you want anything to happen at all.

Your Tax Dollars at Work

The EPA, in conjunction with the National Pesticide Information Center (NPIC) and Oregon State University have developed a web-based portal to gather information on ecological pesticide incidents that adversely effect non-target organisms such as bees. The following Internet address: <http://pi.ace.orst.edu/erep/> leads to NPIC's Ecological Pesticide Incident Reporting page that has been set up to collect information directly from beekeepers, as well as government organizations, academia, wildlife rehabilitation centers, and conservation societies. The report questionnaire is quite thorough and includes questions not only about when and where the incident occurred and what the weather was like at the time of the incident, but also about the Pesticide name, product registration number, active ingredients, formulation, etc. Needless to say, this does not make the site very user friendly since these are required fields and it is impossible to finish filing the report unless the requested information is filled in. For those who want to file a report without having all the pertinent information on hand, you can call the NPIC directly (800.858.7378) and file your report with one of their staff.

You can also report the incident directly to the EPA by sending an email to Beekill@EPA.gov. When contacting the EPA, try to provide as much detail as possible. Information should include when the incident took place, the nature of the effects, the number of colonies affected and the environmental conditions associated with the loss. Any information you may have on the surrounding area and what the bees may have been foraging on would be helpful. It is a good idea to also include whether state government representatives were notified and whether an investigation was conducted.

The Burden of Proof

Your ability to fully file a report is greatly increased if you witness a pesticide related bee kill event first-hand. Nevertheless, reporting a pesticide incident that you witness, or even one you don't witness but only observe the devastating aftermath, will carry greater weight if you can provide additional proof in support of your explanation of the event. Since obtaining additional evidence of some sort is critical to the reporting process, having an independent lab test samples from effected hives is extremely valuable. The NPIC provides a link on their website (under "Testing") to the American Association for Laboratory Accreditation (A2LA) which can help you find a facility near you to conduct the testing required to detect suspected chemical contamination of bees or other hive components such as wax, pollen, or honey. Unfortunately, proper testing, especially of numerous samples can be very costly.

Maryanne Frazier at Penn State regularly accepts samples for pesticide testing. The lab she uses currently charges \$290 per sample to test for 172 pesticide related chemical residues that may contaminate a hive. There are limited funds available from a Project Apis m. (PAm) grant funded cost-sharing program that will cover half the fee for having samples tested through Penn State. The beekeeper pays for the other half of the cost. In order to take advantage of the cost-share program contact Maryanne directly at Penn State prior to submitting samples (mfrazier@psu.edu). By participating in the program your test results become part of a confidential data base that is being used to track the chemical exposure of bees throughout the U.S. and its relation to bee health.

When sending in samples for testing it is important to collect a large enough sample and to preserve the integrity of the sample. Normally a minimum of two ounces of the material collected for testing is required whether it is bees, comb, honey, or pollen. Since a pound of bees consist of around 3,000 individuals, a bee sample should consist of at least 400 bees in order to be sure a minimum of two ounces are sampled. Once the sample is gathered, immediate freezing will help preserve the sample and slow down the natural degradation of any chemical residues that the sample may contain. If possible, ship the sample in an insulated package with an ice pack as well.



Recent research by Jeff Pettis and Dennis vanEngelsdorp revealed that undetectable amounts of Imidicloprid in bees causes them to become much more susceptible to diseases like Nosema.

A recent edition of the EZeine, *Catch the Buzz*, www.BeeCulture.com/Buzz suggests documenting the event with photographs and including a witness and the daily newspaper in the photo in order to establish the date of the event. Also recommended is the video taping of the collection of the samples and the sealing of the packages or containers holding the samples. Your account is strengthened if you can include photos when emailing reports of the incident to various agencies and organizations. It is also a good idea to report the event to your local and state beekeeping organizations so they can help spread the word.

The Chemical Industry Cozies Up To Beekeepers

In recent years one of the world's major producer of pesticides, Bayer CropScience, has made repeated efforts to reach out to the beekeeping community in an effort to open up channels of dialog on pesticide issues. Given the collision course pesticides and pollinators are on one can imagine the need to head off any potential back-lash that may result from the unintended impacts on honey bees Bayer's products may be causing. One of the first efforts came in 2008 at the joint convention of the American Beekeeping Federation (ABF) and the American Honey Producers Association (AHPA). During the convention held in Sparks, Nevada Dr. Dave Fischer (Bayer CropScience) teamed up with Dr. Jerry Bromenshenk and various beekeepers in what was hailed as a new model of cooperation between pesticide manufacturers, regulators and beekeepers.

In order to further demonstrate their commitment to honey bee health, Bayer recently announced a new bee health web site. <http://www.bayercropscience.us/our-commitment/bee-health>

Press releases announcing the launch of the site quoted company officials as saying "As a company, Bayer has been committed to supporting bee health for over 25 years." The announcement further states "...We are very excited about launching this new online bee health portal, as it not only underscores Bayer's dedication to sound product development and stewardship, but continues to drive the discussions about the important and complex

role bees play in our backyards, our crop fields and on our planet." At the same time, Bayer has initiated a "Bee Care Program" that will feature two "Bayer Bee Care Centers," one in North Carolina and one in Germany where Bayer is headquartered. In announcing the initiative, Bayer CropScience Chief Executive Officer, Sandra Peterson, said "At Bayer, we take our responsibility to bee health very seriously. We make great efforts to ensure that our products can be used in bee-responsible manner. We do this through researching and extensive testing of our products, thorough risk assessment and the focused stewardship measures we have put in place."

Normally such statements coming from a major pesticide manufacturer would be reassuring. Given the mounting evidence that has surfaced in recent years however, such statements come across more like propaganda and rhetoric reflecting what company officials want the uninformed to believe, rather than being based on historical fact. By forging close alliances with unsuspecting beekeepers, Bayer CropScience is taking a page right out of Sun Tzu's classic book *The Art Of War*, which encourages military strategists to "keep your friends close, and your enemies closer."

A House Divided Against Itself Can Not Stand

When beekeeping groups look to take action to try to limit the use of systemic pesticides, they run into a situation that pits farmer against farmer. Many farmers and gardeners are taught and have come to believe that they must use products like Imidacloprid and Clothianidin in order to successfully produce a crop. Efforts to limit the agricultural community's use of these chemicals divides us, creating feelings of animosity and preventing a unified effort to protect pollinators. With the agricultural community divided and the EPA complicit in providing legal cover for the use of such chemicals, all efforts to ban them or place a limited moratorium on their use have failed in the U.S. despite success in having such products banned in several European countries.

Apologists for the chemical industry like to point out that in countries that have banned certain neonicotinoids, honey bee health has not rebounded. This is only partly



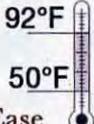
NOD APIARY PRODUCTS
Naturally Optimized Designs

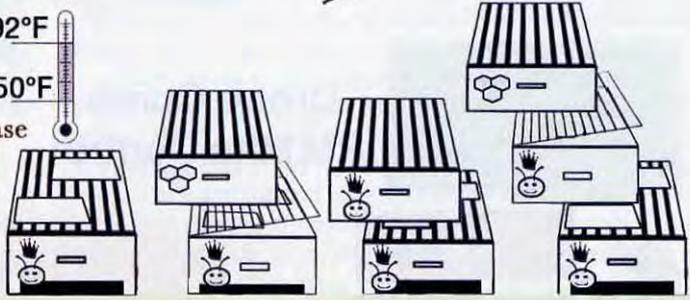
MAQS™
Varroa Control

Up to 95% Efficacy
NEW; Crimped End Strips Peel Apart with Ease
No Extra Equipment
7 Day Treatment
Kills Varroa Under the Cap
Use with Honey Supers On



We Love Bees





Before you treat visit our website to get the most up-to-date information
www.miteaway.com
 866-483-2929




Sponsored by



true. In some places bee health has improved following the discontinuation of systemic pesticides. The problem is that many of these pesticides do not degrade easily and the chemicals and their break down products bioaccumulate in the soil. A farmer can stop applying the pesticide but untreated crops grown in the same fields may continue to contain the chemicals in their systems for years to come.

Legal Petition To Uphold The Law

Under the authority of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) the EPA is authorized to regulate pesticides. A valid pollinator field study on Clothianidin is required in order to determine that the pesticide has no unreasonable environmental effects. By continuing to permit the sale and use of Clothianidin without valid pollinator studies (as mentioned above) the EPA is violating federal law.

In an effort to get the EPA to honor the law as it is written, over two dozen beekeepers and environmental groups have filed a legal petition to prevent further use of Clothianidin until the proper safety studies have been completed. As a result of the filing the EPA may either choose to suspend the use of Clothianidin, or they may simply delay by waiting 90 days (the amount of time they have to respond to the petition by law) and then begin a public comment process to evaluate the concerns raised by the beekeepers and environmental groups in the petition. Until a significant data base of confirmed pesticide related honey bee deaths is developed, legal actions such

as petitioning the government to follow their own laws is about the most effective action beekeepers can take to protect bees from toxic exposure. The reporting of pesticide poisoning of hives and getting those hives tested for toxic residues by an independent lab has never been more important or urgent. **BC**

Reference

- Christian H. Krupke, Greg J. Hunt, Brian D. Eitzer, Gladys Andino, Krispn Given, *Multiple Routes of Pesticide Exposure for Honey Bees Living Near Agricultural Fields*, 7 PLoS ONE 1, (2012), available at e29268.doi:10.1371/journal. one.0029268.
- Andrea Tapparo et al., *Assessment of the Environmental Exposure of Honeybees to Particulate Matter Containing Neonicotinoid Insecticides Coming From Corn Coated Seeds*, 46 ENVTL. SCI. & TECH. 2592 (2012), DOI: 10.1021/es2035152.
- Jeffery S. Pettis et al., *Pesticide Exposure in Honey Bees Results in Increased Levels of the Gut Pathogen Nosema*, NATURWISSENSCHAFTEN (2012) DOI: 10.1007/s00114-011-0881-1.
- Blacqui re, Tjeerd; Smaghe, Guy; van Gestel, Cornelis A. M.; Mommaerts, Veerle: *Neonicotinoids in bees: a review on concentrations, side-effects and risk assessment*. – In: *Exotoxicology*, 28 January 2012
- Chensheng Lu, Kenneth M. Warchol, Richard A. Callahan, *In situ replication of honey bee colony collapse disorder*, Bulletin of Insectology 65 (1): 2012 ISSN 1721-8861
- Wu, J., V. Krischik, and M. Spivak, *Sub-Lethal Effects of Imidacloprid Exposure On Honey Bee Queen Egg-Laying And Activity*, Department of Entomology, University of Minnesota; St. Paul, MN 55108, Abstract for the 2012 American Bee Research Conference, February 7-8 2012 Greenbelt, *American Bee Journal*, April 2012: 407

• One-Piece Plastic Frame & Foundation
• Full Depth & Medium Depth Plastic Foundation – Beeswax Coated

Drone Comb IPM Mite Control

PROTECT YOUR INVESTMENT. 10-Year Guarantee

The Original!
Proudly Made In The U.S.A
Over 30 Years!!!

Nick Lissaman
13818 Oaks Ave, Chino, CA 91710
800.233.2662
info@pierco.net • www.pierco.net
Call for Distributor nearest you

Goat Brains On The Half Skull

Goat brains, pacemakers, Albania, constitutions – you never know what topic will come up at a bee meeting.

Peter Sieling

They put me at the old people's table at the Steuben County Honey bee Association's year end banquet. These guys are a lot closer to my age than they used to be. It was my last official role as president – master of ceremonies. I had to get the folks moving through the food line, introduce the guest speaker, and run the coffee maker.

The food is always great at the potluck banquet. Sometimes it's hard to tell what's in it, but it's always good. As president, I have to sample everything to avoid offending anyone.

I sat across from Russ, a pollen producer. He was telling me about his trip to Albania to build bunk beds for an orphanage.

"You ever eat goat brains?" Russ asked.

"Nope," I answered, looking at the mass of seasoned noodles on my plate and wishing I had the recipe.

"In Albania, they fed us goat brains," Russ continued, "on half a skull. I had one half, my neighbor had the other half. It tasted terrible."

By now I wasn't sure that I wanted the noodle recipe. The left side of my brain knew it was delicious. The right side thought it resembled something out of the abdominal cavity of a woodchuck. I shut off the right side of my brain, increasing blood flow to the rational side.

"So," I returned, "You still selling pollen to all those health food people?" When you don't like the direction of conversation, ask a beekeeper about his bees.

Later I realized my presidential tenure was a lot like that banquet – lots of good stuff, but always and at random times, subjects like goat brains sprang out of nowhere.

Take, for example, the Library. We have a suitcase containing about 80 pounds of books and video cassettes, nothing newer than about 1980. No one has ever borrowed books from it. Charlie got tired of hauling it to meetings and quit bringing it. Two years later – that's tonight – Fred grabs my arm as I'm getting seconds on the marshmallow salad.

"I brought three potential beekeepers tonight and there's no library. What if they want to borrow books? Something's got to change around here!"

"Charlie's the librarian and he couldn't make it tonight, plus he quit bringing the library years ago," I explained. "Maybe you'd like to take over the Library?"

"Pete! You know I can't do that. I can't get to every meeting!" That was true. Fred made it to exactly one meeting this year – the banquet. The library will be next year's problem for next year's president.

Later at the table, Dick had pulled open his shirt and was showing me the outline of his third pacemaker.

I was trying to explain to him how if it started to malfunction, he could lean against his electric bear fence to stay alive till the paramedics arrived. I felt a gentle tap on my shoulder.

"Pete, are we going to have a December meeting? We never got to talk about winterizing colonies. Do you think it's too late to talk about winterizing in December? There are a couple newer members who might need to know..."

We'd already voted to skip the December and January meetings. Strictly speaking, we'd need to open a business meeting after the banquet and vote on it. The constitution also requires us to vote on the new officers in December, the meeting we'd voted to skip so either way we were trampling on our constitution.

"I'll send out an e-mail and anyone can come who isn't in Florida or hibernating. It's never too late to winterize if you haven't done it yet."

Who's in charge of the coffee pot? This was the biggest dilemma of my presidential career. It's one of those old aluminum things from the sixties, and perks about five gallons. Doug likes to make a full batch of ground coffee. Don wants to heat water for instant coffee. "We can have one can of decaffeinated and one of regular!" Michelle tried to solve the problem with coffee bags. Nobody wanted to use a "coffee bag". You have to actually brew your own coffee.

I was helping clean up afterwards and had just lifted the coffeepot off the table to empty the leftover coffee in the sink. It weighed about eighty pounds. A finger poked me in the chest.

"You know what I think we should do?" Larry was shouting. He wasn't angry. He always shouts, probably from running heavy equipment all day without ear plugs. "Scrap the constitution and forget the business meetings. Young people won't put up with that stuff. That's why they never stay. Just have speakers and talk about bees. That's why people come to these meetings."

That pretty much sums up the goat brains. The good stuff? Joan usually gave me the leftover cookies to take home. Betty, after demonstrating the art of pysank... pyanskz...Ukrainian Easter egg decorating, gave me a beautiful Easter egg. I received many letters and e-mails from wild eyed enthusiasts, desperate to save the honey bees from pesticides/republicans/cell phone towers/windmills, and wanting me and the whole club to sign petitions and write our congressmen. Best of all, after two years in the hot seat I can resume my normal civilian life, sitting way in the back and not volunteering for anything ever again. **BC**



Keeping Town Bees

What Will The Neighbors Say?

James E. Tew

Urban Beekeeping

Presently, keeping bees in urban or near urban areas, is surprisingly popular, but I sense that it is primarily surprising just to our current generation of beekeepers. Trend-wise, our industry seems to be near the point where it started about a century and a half ago. During that time village and rural communities were just barely separated. Even if you lived in town, a horse and milk cow with a few chickens in a coop seemed to have been common behind the townhouse.

I know of a house that is firmly in the city limits of Wooster, yet it is “grandfathered in” as a farm dwelling. The barn, with its sagging roofline and animal stalls still stands behind the house. This house – and all the others like it in our city – is given different regulations and tax rates. This house harkens to a time when town and rural were hybridized.

In my early childhood our neighbors had a few chickens in a coop in their backyard. Their yard abutted four other yards. I don’t know that anyone ever thought anything about it. My wife remembers a milk cow in a cow shed near her backyard. Our memories are not uncommon. That was then. This is now. There are lots of similarities.

As such, urban beekeeping is not truly new, but it is new to present day beekeepers. Only recently have we once again begun to keep bees, chickens, and an occasional goat in urban settings. This sustainable backyard concept seems fresh and exciting, yet I suspect that we are essentially where we were about a century ago – or rather some of us are where we were then. Others of us are firmly rooted in the present. They are our neighbors and they will frequently become a part of our urban beehive issues.

Neighbors

Plain and simple – if it were not for neighbors, urban beekeeping would be inconsequential as a trend. Many

of you keep bees with nary a neighbor thought. Others of us (me) have nice, considerate neighbors who know that I keep bees. They have no interest in keeping bees themselves and are not eager to be around my hives. Mine is somewhat of a “neutral” relationship with my neighbors. Others of you have had to go the final distance – tense neighbor relationships and even the occasional lawsuit.

In this neighbor issue, everything is a variable. How close? How many colonies? What’s the house lot size? What’s the neighbor’s ecological attitude? For those of you who have a good thing going with your neighbors, savor and respect the relationship. Others of us have issues that must be addressed.

Not Just Stinging

For many beekeepers, it’s not only about bees. It’s about blue birds, limited pesticide use, native flowers and an organic vegetable garden. Many of you compost leaf litter, collect rain water whenever possible, have gardens and grow bee plants and all of you recycle your refuse. Urban beekeeping is a component of this life that is a comfortable fit in our lifestyle.

In my case, it’s not specifically that I keep bees. More correctly, it is an issue of me not spraying every weed (some are good bee forage). I plant native flowers that can look scruffy at non-flowering times of the year. I have a brush pile at the back of my one acre plot that has a menagerie of animals living under and within it – *and I keep bees*. But without a doubt, the worst has always been my reluctance to constantly spray my lawn and mow it about every three days.

My Lawn

On both sides of me my neighbors do a beautiful job of caring for their lawn. Well . . . I feel that I do a great job, but I do it in a different way. I soil test and apply fertilizer as needed. I leave a high cut (four inches) and mow only when I must. I don’t bag the clippings. I don’t use much mulch and I use very little weed killer. I have a hardy lawn that can withstand moisture stress reasonably well because it is mostly deep-rooted weeds (like white clover). My lawn never looks great, but it is always my lawn.

The two photos show why I sometimes stand out. What does not show up in my lawn photo are the bees and butterflies (and Japanese beetles) that flock to my yard. In no way do I mean to imply that my lawn care scheme is the right one for all nor am I belittling lawn care companies. I don’t mind some of the flowering weeds if they help with diversity and sustainability. Oddly, I don’t mind if others do their thing¹.

¹In my defense, I always keep the front yard mowed and treated. In the back yard, when I let it go, I cut a ten foot border around it to help with my lawn plant life encroaching on my neighbor’s lawns.



Beekeeping Not Understood

We love our bees. Our bees help define our lives. Like our children, when our bees do something wrong, we wince when we are told politely – or otherwise – that our bees – pollinating marvels that they are – are actually doing things others don't like.

How would you respond to this email?

"I know nothing about bees. A year ago a beekeeper moved across the street and we have had various bee incidents since the bees arrived.

All of the problems have centered around him not providing water or letting his water source run dry. He was recently gone and the water trays (inadequate and pitiful) dried up while he was absent. Every day I have had more and more bees at my fountain in my garden. Today they swarmed my house – primarily in the front around the fountain. (I am talking thousands but not in a thick cloud like when the queen moves.) He filled up his water sources after I called him. According to your article on the subject, they probably won't go back to his water, but stick with my steady resource. Should I unplug and drain the fountain if I ever want to sit on my porch again?"²

Each time I read this message, it unnerves me all over again. I didn't have a good, clear answer for this person.

Swimming Pools and Bird Baths

In previous articles I have written about the frequent issue of bees visiting saltwater swimming pools in residential areas. Thousands of bees were attracted to one of these pools in the southeastern U.S. There were many drowned bees and active foragers around the pool deck and on pool ladders. The best recommendation that could be offered was to cover the pool when not using it. That was received with a thud by the pool owners.

Obviously, swimmers had been frequently stung when they came in contact with water-soaked bees. As before, I had only weak offerings for answers. The perfect solution would be a bee-free pool for the homeowners and an alternative dependable water supply for the bees.

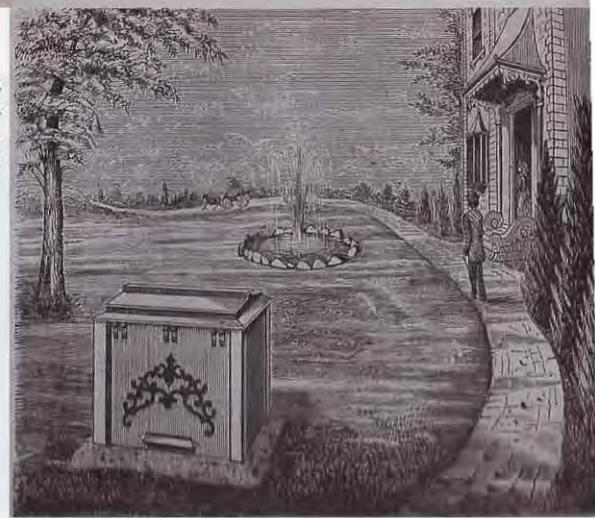
This is not intended to be a piece on water sources for bees but I hover over this subject because it is frequently

²Text of the message is unedited.



My neighbor's lawn. It always looks great.

Urban bees in 1880. The lawn or Chaff hive. (ABC, 1880)



an issue with urban beekeepers. In the email message I received, I had the comfort of it being indirect communication. Looking someone in the eye is much different and far more difficult.

An on-going issue that I have had for many years is with my close neighbor and her bird bath. Inexplicably, extraordinary numbers of honey bees use her metal bird bath as a water supply. The bath is made of some kind of grainy, electroplated metal and it is degrading. With no science whatsoever, I wonder if that degradation process is making the source attractive by contaminating the water with metal salts. Apparently, bees like a bit of common table salt in their water and in their sugar syrup. Indeed, the saltwater swimming pool episode is an example of salt-loving bees. *(I know I will be hearing from chemists on this question. The two salts may very well not be related.)*

In my defense, I keep dependable water in a large animal feed pan. Yet, for the most part, my bees fly over my source and go off my property. My neighbor friend has become emboldened. She shoos the foragers away and dumps in water for birds that now rarely visit the water source. I fear that one day she will be stung.

10 Suggestions For An Urban Water

1. Use a heavy, plastic container (i.e. an animal feed pan) with a capacity of at least two gallons, five is better, 10 even better.
2. Use rock gravel to provide a landing site for water foraging bees (used in cement and available at home



My lawn. A grass/clover/weed mix.



Water foragers at a saltwater pool, but they will readily visit any pool – large or small.

building supply companies). Wash the gravel before using. It will be dirty.

3. Slant the pan with gravel and water to one side to provide a “beach” for foraging bees.
4. Ideally, mount the watering pan on a platform that is about four feet high. Wrap flashing around the supports to prevent raccoons and other animals from using the water source.
5. I suspect it is better to situate the water source in the open sun, if possible.
6. Birds will also use the water source and will frequently defecate in the water. Replace (or add) water as needed.
7. Once you have established the desired water line, bore a ½” hole at the water line on the “pool” side (not the “beach” side) to allow for the overflow of rainwater.
8. If you feel it helps, add about a teaspoon of table salt per gallon of water.
9. NEVER let the source run dry.
10. Never let the source run dry.

Defecation Spots

Another problem that harasses some urban beekeepers is bee defecation spots on automobiles or other outside equipment. Again, there are no good alternatives for this question. The farther away the colonies are from the neighbor’s car, the better.



The source of my water problem.

Very little is known about defecation corridors. Are there bee-preferred directions, fences, tree lines or prevailing winds that will determine the bees’ pathway to their restroom? I do not know, but be aware that others have complained – at times – about bee spots on their cars. As with pools, cars can be covered when not in use, but again, that is a thud of a recommendation.

Beekeeping Is Not Blameless

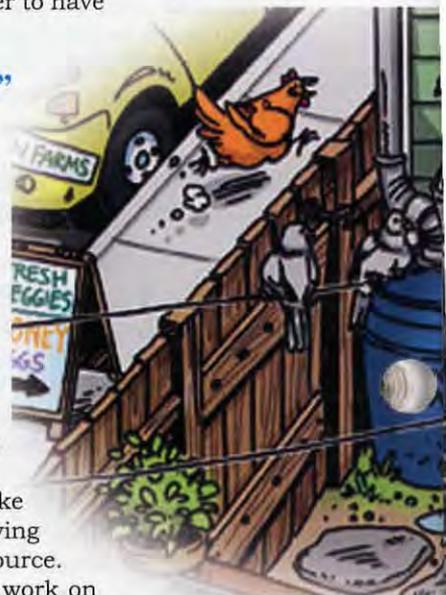
Traditional beekeeping is remarkably rigid. It’s not uncommon for others who are not involved in beekeeping to have to flex for us to keep our bees. Yes, we direly need bees for pollination and honey is a delectable food, but there are some issues on the other end of the spectrum.

The beekeeper’s family must adapt to the bee project (My family adapted many years ago.). Certainly, neighbors must be accommodating. Municipal regulations may even require review. True, bees are very good additions to any neighborhood, but adding bees will require that others flex in various ways in order to have beehives move in.

The Urban “Wish” List

As a suburban beekeeper I have accumulated the following list of informational and procedural needs. I don’t sense that any governmental or university research program is going to take on these backyard beehive needs. What are some of you doing to address the following needs?

1. Obviously, I would like a procedure for supplying a dependable water source. I have been forced to work on that question in my own bee yard.
2. Obviously, I would like to know more about honey bee defecation and how it can be manipulated to direct the bees away from the neighbor’s cars.
3. Urban beekeepers need sheltered (secluded) beeyards. Not that I am hiding anything, but the less my fretful neighbors know, the quieter things are. Fencing, trees or shrubs are the common answer, but these options are either expensive or slow growing. Indoor beekeeping (bee houses) needs to be revisited. These structures were popular in the early 1900s.
4. Some urban beekeepers have asked if it is possible to keep colonies with smaller peak populations. At this point, no. Bee colonies come in one size – extra-large. Bee breeders have spent years developing large, yellow or black bees that produce huge populations. This will lead to swarming issues.
5. Urban beekeepers need techniques for keeping issuing swarms on their property. And – no – banging metal pieces together or spraying with water will not help. Controlling an issuing swarm is not an easy situation to address.





Why is my neighbor's marginal water source so attractive to honey bees?



Water source described. Not yet set on a post.

6. Urban beekeepers need colony management changes. Frequently, the traditional requirement is to open a colony right down to the bottom board resulting in thousands of airborne bees.

Add a neighbor cutting grass at the same time and the potential for an issue arises.

7. Urban beekeepers need information or explanations to use when addressing a concerned non-beekeeper. (*I'm allergic. Your bees are at my bird bath. There's a bee swarm in my yard.*)

At this time, our only true card is the value of bees for pollination. Try explaining pollination to one who believes that a bee sting will kill them.



Green beekeeping

Keeping bees in environmentally sound ways is present-day common sense and it is the philosophy that is currently driving the bee industry. Urban beekeepers can take much of the credit for that. Sustainable backyards, bees on rooftops in intercity areas, limited pesticide use, wildflower plantings, nature center exhibitions and reduced carbon footprints are all appealing to the modern urban beekeeper. This is a good time for beekeeping. For the moment, bees are cautiously tolerated – even encouraged – in many urban areas. This is a trial period. I am certain that beekeeping can pass the test. **BC**

Dr. James E. Tew, State Specialist, Beekeeping, The Alabama Cooperative Extension System, Auburn University; Tewbee2@gmail.com; <http://www.onetew.com>;



One Tew Bee RSS Feed (www.onetew.com/feed/)



<http://www.facebook.com/tewbee2>



@onetewbee

NORTHERN CALIFORNIA FALL QUEENS



530-520-8558 WWW.ZSBEEES.COM
4588 CO. RD. G ORLAND, CA 95963

Ez-Pry HIVE TOOL



Available now at
MANN LAKE LTD
www.mannlakeltd.com

*Ez-Pry is applied technology
making beekeeping smarter!*



Made in the U.S.A
Patent Pending



The Idea Box LLC
theideaboxllc.com
See Demo: ez-pry.com

Making DOOLITTLE'S NUCS

Larry Connor

The break in the writing thread concerning teaching beekeeper instructors continues this month to cover another topic. On pages 64-66 of Ed Simon's book *Bee Equipment Essentials*, he discusses the use of a Conversion Board to 'convert' a five-frame nucleus to a ten-frame hive, or the reverse. Last Summer, at the Heartland Apicultural Society meeting I found an elaborate version of this system that is easily used to make a new colony in small size, a nucleus hive, from a larger colony. I hope the maker of this box, one of the vendors at the HAS show, writes a letter to the editor to lament that he did not get credit, because I cannot find any identification of this person! The frequency of my loosing information is increasing.

This design adds a queen excluder to the conversion board, and as you will see below, it allows an eight- or 10-frame beekeeper to make a nucleus hive with a minimum amount of fuss and bother. G.M. Doolittle was the first person I've found who described this method, so I am going to call this the G.M. Doolittle Nucleus System.

My city apiary has two colonies. One is a new package colony from California. The other is a very nice colony that made it through the Winter as a five-frame nucleus. With the boost of warm weather in March, the colony exploded. A daughter of a Carniolan breeder queen (from Tom and Suki Glenn), this hive survived on five frames in a polystyrene nucleus box kept on the ground against the south garage wall. I would like to tell you how I carefully fed the colony during warm days last Winter, but I was not home much during the Winter. These bees were

completely on their own. They were well provisioned with stored honey and had a good bee population.

In early April I moved the bees to an eight frame deep hive. In late April I added a second box to handle all the emerging bees that were started as brood in March. In early May I added the third deep hive body just in case the black locust hit. A few days later I returned to make up a nucleus hive using the Doolittle system.

Sometime in late April or early May this colony swarmed. I was a few days late adding the second hive body with drawn combs and foundation. I think it was when I was in Denver doing a class.

Today (May 14) when I checked the hive the third box was basically untouched, but all the frames in the first and second boxes were filled with brood, pollen or honey. A lot of honey is being collected from the black locust bloom.

I was very surprised that there were just two frames of brood. What does that mean? Either the colony swarmed (as I suspected earlier) and this is the last of the brood from the old queen, or this is the first brood from the daughter queen. I think it is from the old queen because it is mainly old sealed brood with new bees emerging.

The colony behaves as if there is a queen about the start egg laying because there are patches of worker cells that are empty, surrounded by cells filled with nectar and honey. This is in the center of the hive, in the center of the old brood nest, where one expects to find eggs and young larvae. This suggests strongly that the daughter queen has mated and will soon start laying eggs.

There is also a chance that when I visited the colony earlier I may have damaged the old queen or replacement virgin, unintentionally, of course. If that is the case the colony may be queenless, hopelessly since all the young larvae are grown into emerging workers.

My motivation for this article is simple. I find many beekeepers who have similar experiences this Spring, so there needs to be a discussion about what to do in this scenario.

G.M. Doolittle Nucleus System

The modified conversion board serves multiple roles with this colony, but first I will explain what I did to make a new nucleus. The key features of the conversion board



Bees in the lower hive body. The frame on the side is from the second box.



Conversion board with a piece of queen excluder inserted. Note the rails hold a five frame nuc in center location.

are the section of queen excluder, and a migratory cover that provides 'wings' to cover the entire brood area of the colony below. This is more elaborate than what Doolittle used. He used only a queen excluder and two boards, one on either side of the nucleus box. Or he simply used a hive body that was the same dimension of the full colony. He would have used more brood than one frame in an effort to make a very strong colony of maximum potential. The process below is designed to produce a weaker colony, one that may be used to mate queens, or simply made up with the goal of wintering as a reduced-size unit. It all fits into my concept of keeping two and a half hives.

Here are the steps I took to perform this 'split'.

1. I inspected all the frames, looking for the queen, but did not find her, and setting aside the following: A frame of sealed and emerging brood, a frame of honey and a frame of pollen. The bees were on these frames but were later shaken off.
2. I filled the three empty spaces with drawn comb (in the brood nest) or foundation (in the honey super). The two boxes were returned more or less as they were when I started working, except I had removed the three frames.
3. I placed the Conversion Board with queen excluder on top of the upper hive body. This allowed me to perform the rest of the process and keep the queen out of the nucleus hive.
4. With a five-frame nucleus box in place, I shook all the bees off each the three frames, right at the entrance of the hive. All bees, queen (if present), drones and workers, were forced to walk back into the colony and reorganize after my intrusion into their world. Almost immediately the bees started to expose their Nasanov gland and produce the scent pheromone to attract their sisters in the air and on the ground. Most of the bees were back in the hive within 15 minutes.
5. The three shaken, and thus nearly bee-free frames, were placed into the nucleus box along with two empty frames of foundation. More brood would be ideal, but I wanted to leave one frame of brood below in the colony. *By shaking the bees at the entrance, I was pretty sure that there was no queen in the nucleus box!*
6. I had brought a newly emerged caged virgin queen from the farm during a morning visit. I checked to



Brood frame being placed into the nucleus box over the conversion board.

make sure she was still alive. I put on the pink cap and placed the cage next to the brood frame in the nucleus hive.

7. The lid was put in place.
8. The three remaining frames in the third box were placed on a package hive installed less than three weeks ago. I put the frames over the inner cover to hold the heat in the brood region.

What Happens Next?

9. I trust Doolittle's observation that nurse bees will be attracted to the brood paced above the queen excluder. Because there is pollen and nectar on the surrounding frames a number of the house bees (especially gland producers, comb builders, honey processors and temperature regulators) will be attracted to this area of the hive to continue their work.

Since I had other matters to attend to, I let the nucleus stay on the hive until the next day. Then I moved the frames into the same polystyrene five-frame hive that I had used the over Winter the colony that had given up the three frames.

10. My plan is to rotate several queens through this nucleus during the Summer months, since there is



Placing virgin between brood and honey frame.



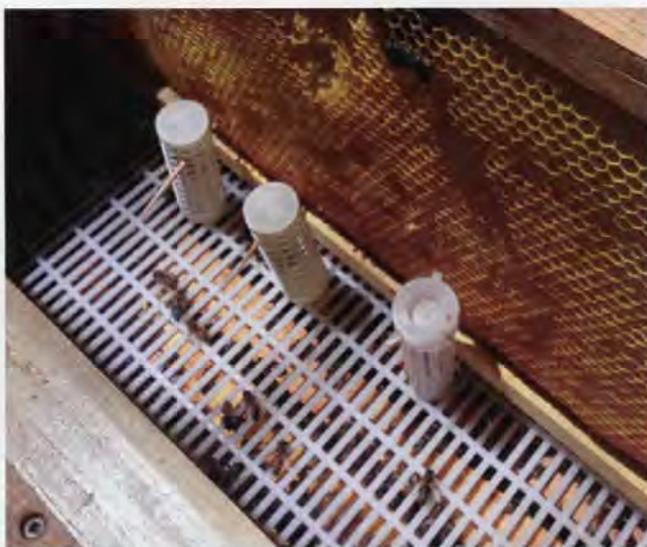
Frames transferred to new home.

a very strong demand for Michigan-raised survivor stock with *Varroa* resistance. In late July or August the last queen will be installed, allowed to mate, and fill the nucleus with bees and stored honey for the Winter.

11. If anything happens to the parent colony or the package colony, I will have a laying colony at hand to requeen and or repopulate the affected colony. Should this happen, I would be able to recharge the nucleus with a new queen from my production of virgins at the farm.
12. Giving each queen about three weeks buildup in the nucleus, I hope to produce four and perhaps five queens (the last one over wintering with the colony). At current market prices each queen is worth \$30 (maybe more) and the over-wintered nucleus \$150. A month later it will be in a full deep hive body and will sell for \$200. The gross income from such a colony could be between \$270 and \$320. Those are theoretical numbers, but for this colony to be put on a truck and sent to California for almond pollination (which is not a consideration for me) or used strictly for honey production (which may area beekeepers are doing well at) it will still be difficult to reach this level of income for a single colony.

This is a fantastic way to evaluate a queen, and let her build in strength if she is superior. Her offspring can be evaluated for temper, temperament, honey and pollen foraging, wintering ability and mite levels by using a powdered sugar dusting. I will record any observations or data on the metal lid of the hive.

13. The queen in the nucleus will form a new colony, either this year (if I put the bees into a eight-frame hive), or next year (when we hope the colony will NOT swarm and produce a large honey crop).
14. Finally, all the drones ultimately produced by the mated version of this queen will be haploid reflections of their mother - in this case pure Carniolan



Other uses for the conversion board and box—here are three swarm cells from one of Sheldon Schwitek's cut-out hives. I have them over the hive to emerge. The bees will cover the cells if alive. Frames need to be added to encourage proper comb construction.

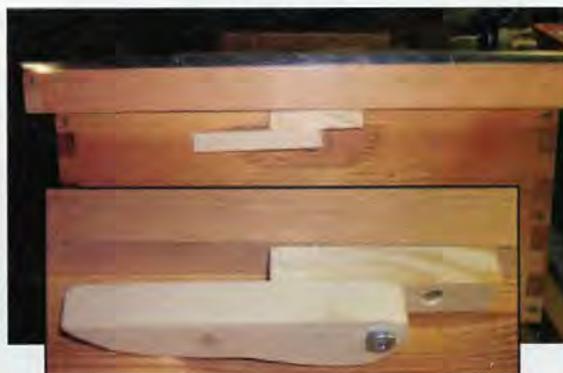
drones. Given the mite-resistant lineage of this queen, it provides a simple yet elegant way to help saturate the area with mite-resistant, Winter-hearty stock. It does not matter which of my beekeeping neighbors drones this virgin mates with as far as the drones she will produce. Should she be superseded, the resulting drones from that queen will still be fifty percent Carniolan bees, and pass on the characteristics of these bees, but at a reduced level.

The primary advantage of this system is to make a new colony without finding a queen, or multiple queens, as I have seen in many colonies this Spring (sister virgins caged in cells by worker bees). Shaking bees may be disturbing for new beekeepers, but it does not hurt the bees as far as I have observed, and they put all matters back to order rather quickly. It is worth a try, even in June or July, and even by first year beekeepers. At this time of season most of the brood you remove will not be producing a honey crop, and you develop a new colony with a break in the brood cycle to reduce mite loads. **BC**

Bee-sentials: A Field Guide by Dr. Connor is available from bee supply dealers or Wicwas Press, 1620 Miller Road, Kalamazoo, MI 49001, for \$29.95 postpaid in the United States. Foreign email LJConnor@aol.com for a quote payable via PayPal, or www.wicwas.com for PayPal purchase. This full color book is ideal for use in bee classes and training programs. Contact us for quantity discounts. See the ad in this issue for further information.

 **Lewis Mill**
Hive Works

No More
Rocks!
Use Camlocks!



Camlocks Start At
\$6.95 + shipping

Lewis Mill
25081 Highway 5
Keytesville, MO 65261
660.788.2602
www.lewis-mill.com

Letter From A Beekeeper's Wife

Summer, 1917

Dear Sis,

Hurrah! Only a week to wait before we see you! It seems too good to be true; but really, if you do not come soon, Billy will surely burst with impatience.

I am so glad that the strenuous days of honey-flow are over before your visit — now we'll all have more time to enjoy it. I have had comparative leisure for the past two weeks, but Rob has been concerned about his bees and has been going over every colony in all the yards looking for disease. He found a couple of colonies in June that he suspected were foulbroody, but we were too busy then to do much about it. He wrote right away for the bee inspector to diagnose the case, and he arrived several days ago. I was never more amazed when a young fellow of college age drove into the yard and announced that he had

come to inspect the bees. I had expected a man of years, whiskers and experience! I watched Rob carefully from the tail of my eye, but he showed no sign of surprise and was very cordial and respectful to the youngster, who couldn't have been any older than Harriette. Rob and Mr. Tait, the inspector, went off to the yard, and when they



came back I realized immediately from their interested conversation that I was all wrong to turn up my nose because of the inspector's youth. He had evidently had a good deal of experience with brood diseases in a college laboratory and also among beekeepers, and he knew what he was talking about. Rob's interest and respect deepened as it always does before a college education. Poor dear! He will never cease regretting that he couldn't have it, and he never seems to realize that he is twice as well educated as many college graduates that I've known. "No," he says, "they have absorbed something from the college atmosphere that I can never have." If all that "atmosphere" was wholesome, the case might be against Rob.

Mr. Tait proved to have a keen mind and gave Rob lots to think over this Winter — problems that they were working on at his college. One problem that interested me and that I should love to work out was whether bees are most attracted by the odor or the color of flowers.

He found, alas! that we have an infectious disease in our Hay-maker yard — European foulbrood. It's as bad as whooping cough for

children, and unless measures are taken to prevent its spread it will go through the whole apiary. It won't go through ours, for Rob is being extremely thorough, although we have very good Italian stock in our yards. He has just ordered enough good resistant Italian queens to put one in each diseased colony and thinks that he will requeen all the apiaries next Spring. He just brought in the queens from the diseased colonies to show Billy before he guillotines them.

Mr. Tait has been inspecting for several days now in our neighborhood and seems to be making our house his headquarters. He and the girls find a great deal to say to each other; and, although I like him very much, I'll breathe easier when he goes. I suppose no mother is ever ready to have her girls grow up to the young-man-caller stage.

Poor boy! He has had his troubles with one farmer here. Isn't

it strange that some people resent offers of help, even from the State? Rob has been especially anxious about this farmer's bees for he thinks that apiary is the source of infection around here. Several times he has offered his services but the farmer has always refused to let him go over the colonies, and has told him he knows this foulbrood

is only a scare. When Mr. Tait came Rob urged him to go over there first of all and he did, but the suspicious old fellow ordered him off the place with a shot-gun and said he wouldn't have any "young cub" look at his bees and tell him what to do. Instead of leaving, that tactful and brave youth engaged Mr. Spaulding in conversation concerning bees, entirely ignoring the shot-gun. I think the old fellow must have admired the boy's courage — at any rate, after half an hour's talk he actually invited him in to look over his colonies to see whether there was disease present! I never saw Rob so pleased over anything — every few minutes he chuckles to himself and I know he is thinking how Mr. Tait got around crusty Mr. Spaulding. Tomorrow Rob and the inspector are to spend the day treating the Spaulding apiary.

Billy considers Mr. Tait a hero, and the girls talk of nothing but his victory. I wouldn't mind a change of subject myself, and shall be delighted when you come to create a diversion. Of course that isn't the only reason I am so impatient to see you!

As ever, Mary

BUILD A GABLED ROOF

Pat Driscoll

In an article about the Warré hive a few years ago in *Bee Culture Magazine*, there was mention of a gabled roof design. Apparently responding to the obvious decline in beekeeping in France since his youth, Warré experimented with some 350 hives of various designs. Warré felt a sloping roof calmed the bees more than a flat roof design when it rains.

I decided to make my gabled roofs rather than spending a lot of money on the British roofs that are in the catalogues. The classical Warré hive has an open space below the gable. The one shown in this article does not. (The next project I will do will be a hip roof design . . . stay tuned!)

I used common pine, but cedar would be a nice touch. For the roof covering I used a sheet of aluminum, since copper sheeting was very costly. One has to be careful about dimensioning the inside of the roof support (see the 20.125" dimension) or else one will have designed in an unintended upper entrance. I glued and brad nailed all joints and painted the outside. I used construction adhesive to hold the aluminum sheet to the roof. You can decide whether to block the gable from the inner cover slotted hole; you can put a screen over the inner cover slot if you don't want the girls building feral comb in the gable. You don't need a brick on these covers.



Roof board detail.



Roof side insert.



Roof with insert glued and brad nailed.



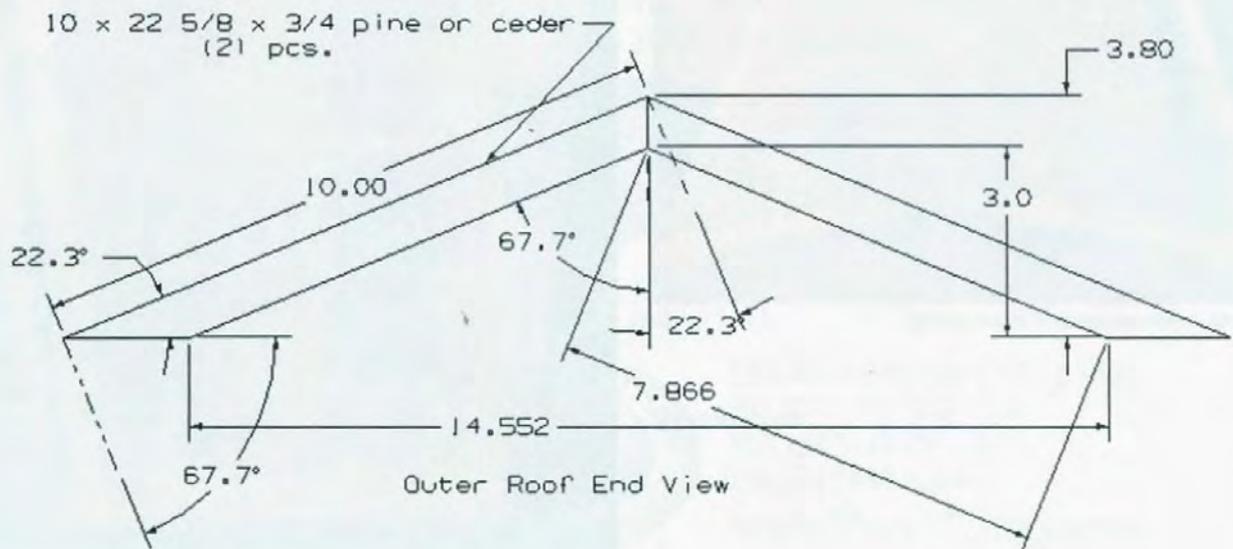
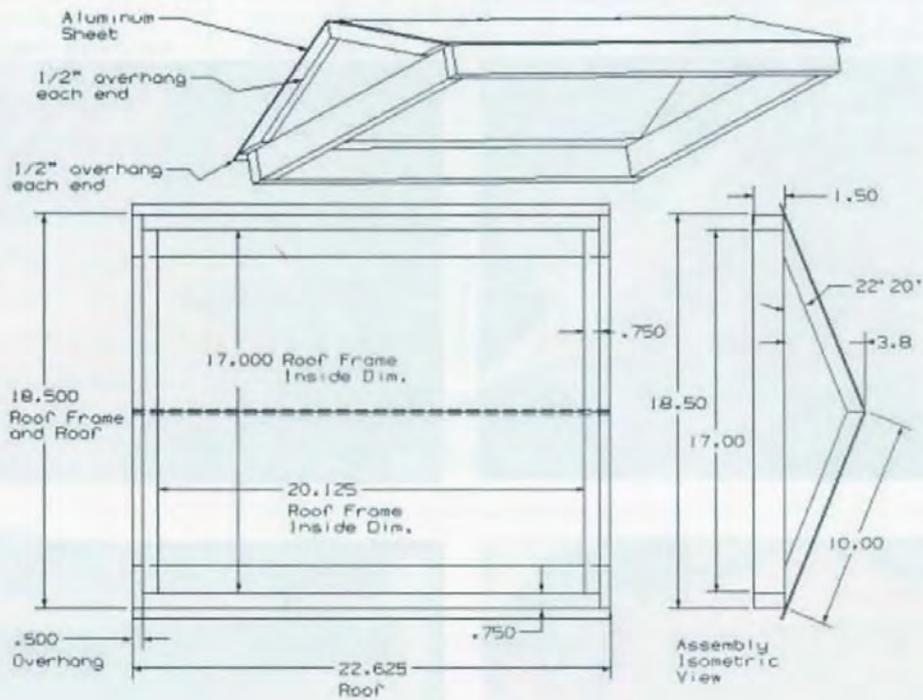
Roof inside view.



Roof end view.



Aluminum top.



Helping Out

*Mostly, beekeepers
are good people!*

William J. Hall

In February 1943, my dad received a letter from a young soldier stationed in England who was helping build up an air armada to bomb Hitler's Nazi Germany. He was 27-year-old Louis Harbin of Cottage Hill, Mobile county, Alabama. Before Pearl Harbor, Louis had been working hard to build up the number of colonies of Italian honey bees in his apiary. He had started keeping bees when he was a young boy, but really worked hard in his bees and supplies since he had graduated from Auburn University at the age of 21. The start of WWII interrupted his plans along with the plans of thousands of other young men and women all over the world.

Louis' letter stated that he had 200 colonies of bees when he left for the Army, but they had dwindled down to 148 colonies and could get worse. He asked my dad if he could help him restore order in his apiary. He went on to say that he had seen my dad's ad in an issue of a magazine by A.I. Root, where my dad advertised his business, Hall's Apiary. Since we lived less than 15 miles from his home, he felt that we might be able to help.

Louis' dad had tried to work the bees, but he was not only afraid of them due to a slight allergic reaction to the stings, he had his time taken up in running the family general store and nursery and a large tract of dairyland. There were few young men around to help out, and those that could be found had no desire to be

stung by bees while working in them. A two-story hive was left open to the elements for about five weeks when Louis' dad and two young boys ran off as the bees got out of hand.

It was five weeks from the time the letter from Louis came until an agreement had been made between my dad and Louis and Louis' dad knew we were coming. We included my dad, my mother's brother, Jack, and me.

Although I was about to turn 10 in the Summer of 1943, I could help my dad quite a lot since I had been helping him since I was four, and Jack was three years older than me. We both loved beekeeping, and my dad was a good teacher – for he had studied bees in college and had a hard back copy of the old standby manual by A.I. Root, *ABC & XYZ of Bee Culture*.

The agreement was that all increases from the current number of colonies would be split when Louis came home from overseas. My dad thought that was a very generous offer from Louis, since he was a victim of bad times. The bees in "our" apiary would take a lot of our time because we were shipping a few package bees and queens and rearing extra queens to be sold locally and out of state. Jack and I would be available more during Summer vacation to work in both places. We started about the last of March 1943 to try and save Harbin Apiaries.

The first thing we did was to find all the hives in the home yard and out yards that were vacant of bees. There were 52 nice hive bodies that had laying laing workers or were just void of bees and filled with wax worms. These were cleaned up and fitted with sealed brood and honey along with about one frame of bee bread, some bees from the out yard, and a new queen from our queen rearing program. The numbers rose nicely, as the Spring rush caused a surplus of bees in the strong colonies, and they needed to either have something to do, or have some of the bees removed and put to good use.

Louis was an expert woodworker, and he had several complete hive units, frames, spare supers, and extra tops and bottoms. Most of his hive bodies were unique in that he had milled grooves on the outside three eights inch deep and 1/2-inch

wide. He said that it was for ventilation in the warm climate of Mobile, and it lightened the weight also. I don't know whether it did any good, but it sure looked good. We used up all of the spare parts and filled the hives with bees and queens and used some of our supplies to gain as many increases as we could. When Louis came home in September, 1945, there were 236 colonies in his apiary. The rapid increase in numbers was due to having available equipment, young queens, and bees from hives that needed room anyway.

Louis was overjoyed at the increases, and told my dad he could have 50 of the 88 increases, but my dad told him 40 would be more than enough. That was the beginning of a long friendship with Louis. He married shortly after returning home and started a family right off. A son, Douglas was born in 1946, and twin boys followed about a year later, Paul and Fred. The boys grew up in their dad's bee and woodworking business – later adding a nursery.

Louis became president of the Mobile chapter of the Alabama Beekeeper Association and was known all over Alabama and the SE U.S. He helped many interested people to learn about beekeeping and queen rearing. As the boys grew, they became as ardent in beekeeping as their father. They helped him to build a large business in honey production and shipped some package bees.

As I said before, Louis was an expert in woodworking. He made beautiful hope chests and jewelry boxes, and the last one he made before he died in 1974 was presented to the National Beekeepers Association Queen (a young lady was selected each year) by his son Paul, because Louis was too ill to go.

The preceding story is not to show what a good guy my dad was, but more to show how close of a society that beekeepers represent. Beekeepers are good people that will always help one another. **BC**

William Hall is a beekeeper living in Wilmer, AL.

Vendors, Part II

More on how to keep your vendors happy.

Ann Harman

If you recall in Part 1 of the saga of vendors at beekeeping meetings I mentioned some other needs common to the two groups – the BIG groups and the small groups – and also some needs special to each group. I defined the Big Guys – like Dadant, Brushy Mountain, Kelley, Mann Lake and some others, and the Small Ones, who are usually local to the meeting – like the soap makers, T-shirt sellers, and maybe a local or regional supplier.

Do you remember the Vendor Coordinator (VC) so essential to the smooth functioning of both the meeting and especially the vendors? Although the tasks performed by the VC before, during and after the meeting seem enormous they really are not.

Let's look at a few other things the VC can do for both groups of vendors. The VC needs to provide each vendor, large or small, with the program of the meeting as soon as the club has made it available. Even a tentative program is useful if the club's Program Committee is slow in composing it. Let's see why advance notice of the program topics is so important.

Suppose the program contains a presentation and/or workshop in raising queens. Equipment suppliers know that all kinds of queen-raising items will be in demand. Advance notice means that the equipment vendor now knows to bring a large supply of the numerous items that pertain to queens. An increased number of books on raising queens will be needed. What about a presentation and workshop on making mead? Bring more mead-making supplies. Mead books will fly off the table. Have plenty of mead books for sale.

Although the program for a meeting may be posted on a website (not all are user-friendly) vendors are busy with their everyday businesses and tasks. Once vendors realize that there is a VC looking after their needs they can then continue planning their wares for the meeting.

Giving the vendors the program in advance means more happy customers and thus more happy vendors. Since vendors are busy packing their wares to come to the meeting they may neglect to bring the program with them. If the VC can provide vendors with a program on the day(s) of the meeting then the vendors know what time the breaks and meal times are and can be prepared for the crush of customers. The VC could put a program

along with the identifying label on each vendor table.

Some meetings, especially the larger ones will have "pipe and drape" in the vendor area and table covers. All vendors, large or small, need to know if these will be used. Banners and signs can be hung from the pipes at the back of the space. Small vendors, who may never have had a banner, may wish to have one made.

At some venues, usually for smaller associations, vendors may be placed in the same room as the audience. The VC should work with the meeting planners during site selection to try to avoid such a situation. Neither vendors nor speakers want to compete for the attention of the attendees. However, if the situation is unavoidable it would be nice if the vendors would refrain from doing business while the speakers are giving their presentations. It is always helpful if the Vendor Coordinator could make

several announcements during the program that vendors will be open for business during breaks and lunch but not during the presentations. It is just not polite to have background conversation while a speaker is talking.

Occasionally non-keepers may come through the vendor area. On rare occasions the meeting has been advertised to the local community. Commonly, a meeting held at a college or large hotel brings faculty, administrative staff or other employees to the

meeting. All these people are quite curious about bees and honey bee problems. Having the non-keeper public is great publicity for honey bees.

The Big Guys have special needs. The Big Guys are the national and regional equipment manufacturers and suppliers. They have trucks with trailers filled with big boxes and shelf units on wheels. They bring bulky extractors, boxes of all kinds of foundation, woodenware (tops, bottoms and hive bodies), big boxes filled with helmets and veils, plus all the small items beekeepers need.

If the travel distance from the supplier to the meeting venue is long, it is usually more practical to ship boxes rather than drive. The VC now needs to find where these shipments can be received and how to get them to the venue. Sometimes the venue can receive them; other times absolutely not. A club should be able to find a member to volunteer space for shipments and a way to transport them to the venue. Do not expect the VC to volunteer



– the VC has quite enough responsibilities.

When the venue is within driving distance the suppliers will come with truck and trailer. Here is where access and parking are very important. Is there a loading dock or a ramp? How much room is there at the dock? Perhaps two or three suppliers arrive at the same time. The VC needs to think about both the initial unloading and loading up at the end of the meeting. For everything to go smoothly and have happy vendors it is necessary for the VC to know the situation ahead of time and inform the vendors ahead of time.

Now that the trailers are unloaded, it's time to park them. They take up two spaces, maybe more. Furthermore, some beekeepers were smart enough to have ordered supplies and plan to pick them up at the meeting. One vendor said fully one-third of his trailer was full of boxes to be picked up at the meeting, which saves his customers all those postage costs. So the customers need access to the trailers. Can the venue parking lot satisfy both the vendor and the customers? Here again the VC needs to see the situation ahead of time so that the vendors can be guided on the meeting day.

You can see the advantage of having all this done way ahead of time. When you know which vendors will be at the meeting you can tell your members, or put it in the meeting announcement and those who plan on attending can order in advance – they save money, the vendor makes an additional sale, and *you* look like a genius.

Now that the Big Guys have unpacked their bulky wares, what can be done with the collection of very large boxes? Will these boxes have to be stored in the trailers or trucks? Yes, in the vendor area the boxes will be in the way of customers coming to pick up equipment they ordered. Perhaps the VC can find storage space at the venue that would be convenient. The VC will need to discuss storage with the venue management and then inform the vendor.

The Small Ones are perhaps the simplest vendors in terms of needs. However some are very used to being a vendor while others may have attended only a few or even no previous meetings. Some may be attending their first meeting as a vendor. A bit of special attention given to the first-time vendor may encourage them to return to future meetings, even if a distance away.

Frequently small vendors are a single person. Sometimes a Small One may not actually be a beekeeper, so

having access to a program early on at the meeting is really important. The vendor can then know when few or no customers will come (a rest room break for the vendor) and when to be ready for the breaks and lunch.

As the meeting is approaching the end, the VC could pay a short visit to each vendor. First, each vendor must be thanked for participation in the meeting. In addition the VC is looking for problems that may arise again in the future. Suggestions of any kind should be accepted even if impractical. However vendors must recognize that not every venue is going to be perfect.

Sometimes a local association has a local vendor. The VC could certainly contact this local vendor for information on the venue or other aspects of the club's meetings. The VC would then be in a better position to give information to prospective vendors.

What if it is pouring rain at set-up or take-down time? Well, that can be blamed on Mother Nature, not on the Vendor Coordinator or the vendors. However, it really is up to the vendors to supply their own tarps, protective plastic sheets and umbrellas. Perhaps a few extra volunteers could speed up the work.

Remember, the more advance information any vendor, large or small, has, the happier the vendor will be. Oh yes, vendors! Be sure to thank the VC for all the work before, during and after the meeting.

What? Your association does not have a Vendor Coordinator? And yet vendors still come to meetings. It's now time to find a VC in your membership. You will soon find your meetings become vendor-friendly. You may attract both more Big Guys and Small Ones that will lend variety to the wares your membership wants.

Vendors really do help attract beekeepers to a meeting. Remember, beekeepers whether newbees or experienced want to see equipment of all kinds and ask questions about the new items in catalogs. When more vendors come to a meeting, more beekeepers will come, increasing the revenue for the association and the vendors, so vendors will be happy to return.

The more beekeepers attending the meeting the better informed these beekeepers are to make their craft more enjoyable for themselves and their bees. Isn't that education the main purpose for holding meetings? **BC**

Ann Harman cares for and feeds vendors at meetings all over the U.S. Look for C&H Books at your next meeting.

Using Beekeepers' real world experiences to solve Beekeepers' real world problems

Survey Says:

Last year US beekeepers reported the products they used (if any) to control Varroa mites. Beekeepers who reported using **Apiguard®** or **API LIFE VAR®** lost fewer colonies than those who used other varroa mite control products or no products at all.

For more details on these and other results, go to Beeinformed.org

Be Included. Be Involved. Bee Informed.

Sign Up!
Participate!



Sign up to participate in our next survey now!

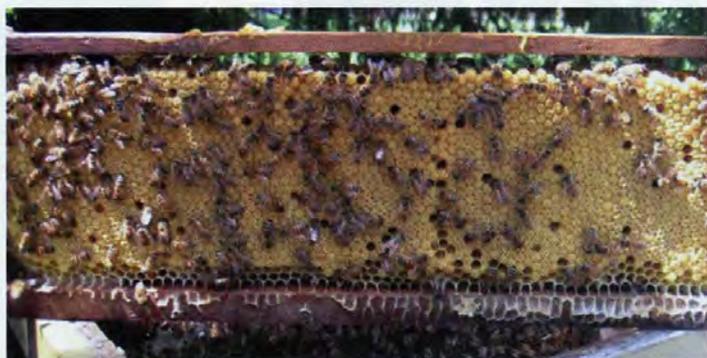


Just In Time –

Dal Allan

A swarm took up residence in an empty super with unwired frames that are used for comb honey. Each frame has a wood or plastic foundation starter strip to encourage comb building, and the super has spacers installed to hold nine frames. The bees started in the center and built left when facing the hive. There was nothing drawn on the right side of the first frame.

In the best of circumstances, there would have been time to set up a tripod and have all photos be from the same position but things are not that well organized in the yard. The sequence is consistent, Side one and Side two of each frame, and the perspective is similar but not identical.



Frame 1 was perfectly centered, and dense with brood. Interestingly, the comb has not been attached to either side bar or the bottom bar in this or any other frame.



Frame 2 was a duplicate of Frame 1.



Frame 3 was a little less completely filled but still dense with brood. The comb was not perfectly centered, it was 'bulging' a little towards Frame 2, a harbinger of things to come as the bees decided to reduce the spacing between comb centers.





On Frame 4 the bees ignored the starter strip, the comb was built off-center and the starter strip can clearly be seen on Side two.



Both edges of Frame 5 were used to start comb building, Side one was well under way and Side two had just begun. The Side one comb was deeper than the other combs.



A horizontal perspective shows that this comb was not straight, the bees had a double curvature going, quite unlike the other combs which were as straight as if they had started from foundation.



Side 2's starting comb was removed, and holes were drilled 1/4" on either side of the existing wiring holes. Fishing line was strung on Side 2 while Frame 5 was held vertical in a vice.

There was sufficient open space on the top bar to hold the frame horizontal and let the comb settle on the strung line. The bottom and top of the comb were cut away, the comb re-positioned to sit directly under the starter strip, and another line strung to hold the comb in place.



The frames were transferred to another super, one without nine-frame spacer bars. A capped frame from a nine-frame super was positioned on the outside left, and Frame 4's open side abutted against it. The bulging honeycomb closed the open area of Side 2 and reduced it to a bee-space gap. Frame 5 was re-positioned next to Frame 1 and the bees began building to the right of center.

The timing was fortuitous, it was an easy fix compared to what it would have been in a few more days. **BC**

Dal Allan catches, and fixes swarms in Saratoga, CA.

Bill Carpenter

Florida's Renaissance Man

Duane Waid

We have all spent time with someone, only to leave them vowing to try to get back to learn more from them, at a later date. Well, such was the case last year when we had the opportunity to visit Bill and Martha Carpenter, at their Frostproof, FL. home.

It was a rainy day last February when my beekeeping friend Bill Hilker and I stopped to see the Carpenter's honey and queen rearing operation. Because of the weather we intended to only say hello and make arrangements to visit them at a later date, but Martha cordially invited us into the living room to visit with Bill and wait out the storm which she accurately predicted would be short lived.

As we chatted, Bill was called to the telephone several times to discuss with customers revised shipping dates for queens, production having been delayed due to inclement weather. We were quick to realize Bills dedication to make deliveries at the convenience of his customers, a trait which has apparently earned him much trust over the years. Meanwhile, Martha greeted a customer who had come to the front door, in a warm, friendly manner such as one friend would greet another.

The point that I am making is, here is a couple who really love their work as beekeepers and we were quick to realize that they are much more than beekeepers.

The Carpenters raise over 1000 Queens each year, shipping them all over the country.

Bill is also a mechanic who specializes in hydraulics and metal work, an outcrop of his experience of growing up on a farm and from operating a logging business and of serving in the military. His handy-work ranges all the way from redesigning tiny grafting tools that are used to transfer young larvae for his queen rearing business to working on pieces of huge equipment and much in between.

Both Bill and Martha are active in area beekeeping organizations, and Martha was secretary of the Ridge Beekeepers Association.

Beekeeping began one day during gym class when Bill, a high school sophomore in Herman, NY, was attracted to the sound of someone drumming on a tin pan. He wandered off to investigate and found a local beekeeper "drumming down" a swarm of honey bees. Intrigued, Bill helped hive the swarm and was consequently late getting back to English class.



Bill and one of his fence post mating nucs.



Bill's ingenuity is reflected in every piece of equipment he uses. His smoker for instance. This is his rebuilt smoker which incorporates a perforated inner lid. Starting is no problem either, using a hand vac fitted with an attachment Bill made which fits over the opening in the smoker.



Carpenter's super strong cell builder colonies



Grafted cells are placed in this insulated box awaiting placement into very strong starter colonies.



Queen storage.

As a penalty Bill was required to make a report to the class about beekeeping. Not one to do any less than his best he researched the subject and made a commendable report. And became a beekeeper.

Soon, Bill's father Carl, a dairy farmer and logger, took an interest in his son's new-found craft and eventually purchased the bees of a neighbor who was killed in a hunting accident. Together they grew the business to more than 500 colonies and the whole family became involved.

Bill's beekeeping career was interrupted from 1962-1965 while he was serving his country in the Air Force, but upon returning home he picked up where he had left off, building his numbers to over 2000 colonies.

In New York, Carpenter served for a time as a state bee inspector and at another time worked on the St. Lawrence Seaway and the Niagara Falls project.

In 1974 Bill met Martha Marlow who soon became his wife, best friend and helper. Asked if she worked with him on the bees, she quipped, "Yes, I had to if I wanted to spend any time with my new husband. He worked continuously".

In the late 60s Bill, now a commercial pollinator, began moving his bees between Florida, New York and Minnesota. Along the way he purchased the bees of Buerell Lane of Trumansburg, NY. This went on until the severe frosts and droughts of the early 1980s caused high losses of bees and Bill accepted a job with Procter

and Gamble from 1983-1995. Working bees remained a part time business.

A second interruption for military duty occurred in the late 90s when Bill's National Guard unit was re-activated to serve in the Gulf War in Saudi Arabia. Bill returned with health issues and uncertain of what the future had in store.

It was then that he turned his attention to queen rearing, after Alton Struthers, a large Lake Wakes beekeeper asked him to raise a few queens. He began developing a strain of bees emphasizing such desirable traits as mite resistance, honey production and gentleness.

To accomplish the first trait – mite resistance – Bill discontinued all treatments for mites. Using screened bottom boards (of his own design), it was possible to monitor mite drop, but more precisely, to count "pinched mites," those that were actually killed by the bees themselves, selecting colonies most likely to rid their hives of mites naturally.

Step two: production. This came from monitoring the mite resistant colonies, narrowing the field down to a few colonies with outstanding honey production, while the process of selecting for gentleness was ongoing.

Today Bill grafts from four breeder colonies developed over the years which carry these traits, and since 90% of his orders are from repeat customers, it appears evident that he has accomplished what he set out to do.

Carpenter has between 300-400 nuc boxes, each divided into two parts, which he uses for mating about 1000 queens each year. He is very selective, grafting about 150 cells in order to produce 100 queens. Part of this overrun, though, is necessary to offset those queens which are eaten by birds while on their mating flights. Especially troublesome are mocking birds which arrive in droves as soon as his mating nucs are set out, says Bill.

Bills ingenuity is evident from the time one enters his yard and sees the hive platforms constructed from frames of mobile homes destroyed by hurricanes. Then, there is the completely rebuilt smoker, the smoker fuel saver, the queen locator, a redesigned grafting tool, a cell incubator, hive boxes divided for special uses, an air conditioned building to protect frames from wax moths . . . and I could go on and on.

But space will not permit it. So maybe one day I'll go back to Florida and tell you the "Rest of the Story" about Bill Carpenter, the "Renaissance Man". **BC**



Have trouble locating a queen? Bill doesn't. He shakes the bees off frames into this box, which he sets on a hive containing brood. Worker bees go through the excluder on the bottom of the box, into the hive below, but sooner or later he spots the queen trying, but not able to negotiate the excluder.

Unusual Shrubs For Bees

Connie Krochmal

There are many shrubs to choose from that will work in your bee garden.



California Lilac

When it comes to shrubs for the bee garden there are many from which beekeepers can choose. Here are details on some lesser known species that provide bees with nectar and/or pollen.

Beautyberry (*Callicarpa spp.*)

These shrubs bring nectar for bees. Blooming on new wood, several species are cultivated. In the North, they can die to the ground in Winter with new shoots quickly emerging in the Spring. The opposite leaves are toothed. The tubular blooms, often pink, open in rounded clusters. Beautyberry is often grown for the colorful, round, berry-like fruits, which are borne freely. The following are hardy to zone five.

Bodinier beautyberry (*Callicarpa bodinieri*) is an erect, medium sized deciduous shrub, nine feet in height. Its slender foliage is five inches in length. The lilac flowers form dense clusters, 1½ inches across. The fruits ripen to purple or lilac-violet.

Japanese beautyberry (*Callicarpa japonica*) is very free flowering. This upright, compact deciduous plant reaches four feet in height. The blos-

soms, light pink or white, open in July and August. The five-inch-long foliage is oval. The species has metallic violet fruits although one variety produces white berries. A number of cultivars are available.

Purple beautyberry (*Callicarpa dichotoma*) is an upright deciduous shrub with smaller leaves than the Japanese beautyberry. This is two to four feet in height. The three-inch-long foliage is oblong. It has small clusters of petite pink blossoms during July and August. The fruits are purple to violet.

Burkwood osmanthus (*Osmanthus x burkwoodii*)

All of the osmanthus bring nectar and pollen. Burkwood osmanthus is hardy to zone six. An excellent, dense evergreen shrub, it reaches seven to 10 feet in height. The leathery foliage is glossy, toothed, and thick. Round to oval, it is two inches long. The scented, white blossoms open freely during April and May in clusters. In addition to this hybrid, at least two other species of osmanthus are hardy to zone six.

Bush honeysuckle (*Diervilla spp.*)

Easy to grow, these honeysuckle relatives provide bees with nectar. Native to the East, these deciduous plants have suckering roots. The bush honeysuckles need a well drained soil. These are adapted to part shade and full sun. Several species are hardy to zone four or so.

Bush honeysuckle (*Diervilla lonicera*) is hardy to zone four. This is three feet in height. It thrives in poor soils. The oblong to oval foliage is four inches in length. Resembling honeysuckle blossoms, the light yellow flowers open in June and July in small clusters.

Southern bush honeysuckle (*Diervilla sessifolia*) is hardy to zone four. This vigorous species reaches five feet in height with a matching spread. The leaves are long and narrow. The yellow, trumpet-like flowers open in June and July in pairs or in short clusters. This plant adapts to spots where other species fail to thrive.

Butterfly bush (*Buddleia spp.*)

In addition to the commonly grown butterfly bush (*Buddleia da-*



Beautyberry.



Bush honeysuckle.



Butterfly Bush.

vidii), there are several lesser known species that are ideal for bee gardens. Bees collect nectar and pollen from all of the butterfly bush flowers. These shrubs have opposite leaves.

Buddleia x weyeriana is hardy to zone five. This vigorous hybrid is six to 15 feet tall. With arching stems, this has slender deciduous foliage. The fragrant blooms are yellow-orange with purple. These form round, ball-like clusters all Summer. This tolerates salt spray. Several cultivars are available.

Chilean orange ball tree (*Buddleia globosa*) bears yellow-orange flowers in three-inch-wide, ball-shaped clusters during the Summer. Hardy to zone seven, it prefers full sun. This deciduous or semi-evergreen shrub has an upright, spreading growth habit. It reaches six to 15 feet in height. Foliage is nine inches long. The stems are erect. Lemon Ball is a variety with pure yellow blooms.

California lilac (*Ceanothus spp.*)

These shrubs provide bees with nectar and pollen. A number of species are native to the U.S., while others are cultivated forms. Several species are hardy to zone six. These can be evergreen or deciduous.

New Jersey tea (*Ceanothus americanus*) is native to the East and Central U.S. Hardy to zone four, this evergreen prefers poor, dry soil. Reaching about three to eight feet in height, it has toothed, oval foliage, four inches long. The white blossoms appear in June and July in upright, dense, oblong, flat-topped clusters. Many cultivars are available.

Squaw carpet (*Ceanothus prostratus*) is a sub-alpine evergreen spe-

cies that is hardy to zone seven. Less than a foot in height, it grows to eight feet across. The spiny, evergreen foliage is wedge-shaped. This is noted for its exquisite, blue flowers, appearing in short, terminal clusters.

Veitch California lilac (*Ceanothus x veitchianus*) is a natural hybrid. An evergreen, this is hardy to zone six. The small, toothed, wedge-shaped foliage is thick. Very floriferous, it produces Summer-blooming blue flowers that resemble those of the true lilacs.

Daphne (*Daphne spp.*)

Bees gather nectar and pollen from daphnes. Several species and hybrids are hardy to zones four and five. These have small, slender, alternate leaves. They bear clusters of very scented blooms, which lack petals.

Generally, daphnes need a cool, rich, moist, well drained, somewhat acid soil (5 to 5.5 pH). They grow well wherever azaleas and rhododendrons thrive. Those species with large foliage prefer some afternoon shade. Others tolerate full sun.

Balkan daphne (*Daphne blagayana*) is hardy to zone five. With prostrate stems less than a foot in height, this forms a spreading, three-foot-wide mat. The large, gray-green evergreen to semi-evergreen foliage is nearly two inches long. Very floriferous, Balkan daphne has creamy white, scented blooms in March and April. These open in large, two inch clusters or heads. This species likes partial shade.

Burkwood daphne (*Daphne x burkwoodii*) is a dense, semi-evergreen hybrid that reaches four to five feet in height. The gray-green, narrow foliage is 2½ inches long. This free flowering plant is covered with small,

creamy white, scented blooms that can fade to pink. These form dense, terminal clusters in May. Hardy to zone five, this is one of the easiest daphnes to grow. It likes some shade. Various cultivars are available.

Garland or rose daphne (*Daphne cneorum*) is a dense, twiggy evergreen that is hardy to zone four. Less than a foot in height, the prostrate stems form a two-foot-wide mat. The small, narrow leaves are an inch long. The scented, vivid pink blossoms open in April and May in large terminal heads. Somewhat fussier than some daphnes, this requires a cool, moist soil in partial shade. Several cultivars are available with the flower color varying.

Flowering raspberries (*Rubus spp.*)

These deciduous or evergreen plants provide bees with nectar and pollen. Remove the second year stems that have flowered during late Fall or Winter. Easy to grow, flowering raspberries tolerate most any soil, even poor ones, provided it isn't dry. They prefer a moist, rich, well drained spot. Some tolerate boggy conditions. These are adapted to full sun and partial shade. Although the pH preference can vary slightly from one species to another, most do well in an alkaline to neutral soils.

One highly recommended species is the flowering raspberry (*Rubus odoratus*). Native to the East, this deciduous ornamental is hardy to zone three. It is considered one of the best ornamental raspberries. This does well in partial shade. A showy, vigorous, erect, deciduous shrub, flowering raspberry has thornless, arching stems and peeling bark. The young shoots are very hairy. This



California lilac.

can reach four to eight feet in height with a matching spread. The velvety, toothed, palmate foliage has five lobes. Quite large, the leaves are up to a foot wide. This suckering plant has gorgeous, large, scented, purple to purplish-rose flowers. Two inches wide, these bloom from June through September in branching clusters.

Magellan fuchsia (*Fuchsia magellanica*)

While the blooms of the fancy, modern, large-flowered hybrid fuchsias are unsuitable for bees, this species stands out from the crowd by providing easy access to nectar and pollen. It is hardy to zone six. Magellan fuchsia is evergreen in mild climates and deciduous elsewhere. This has toothed, oblong to oval leaves, two inches long. Often with red on the underside, these can be either in whorls or opposite. This has petite, two-toned, slender flowers, two inches long. These feature a purple corolla, deep red sepals, and red tubes. They open from mid-June into Fall.

The species is a vigorous, erect shrub. It can reach ten or 20 feet under ideal conditions. This often has peeling bark. Various varieties and cultivars are available.

This species should be sheltered from Winter winds. One particular variety, *var. riccartoni*, has survived in zone five when planted in a sheltered spot. If the stems die over the Winter, new shoots come up in the Spring.

Ornamental currants and gooseberries (*Ribes spp.*)

These deciduous or evergreen plants offer bees nectar and pollen. A number of currants are grown for ornamental purposes. Depending on the species, their hardiness ranges from zone two to five. In order to

bloom, currants need exposure to Winter chill. Easy to grow, these do well in any moist, well drained soil. They need partial shade during the afternoon.

Alpine currant (*Ribes alpinum*) is hardy to zone two. This is a very dense, upright, bushy plant, three to eight feet in height. The small, toothed, two-inch-long foliage has three lobes. The stems are reddish-purple. The small, nodding, green-yellow blossoms form erect, upright clusters during early Spring. This species tolerates full shade.

Clove currant or buffalo currant (*Ribes odoratum*) is around four to six feet tall. It has spineless, loose, erect stems. This species is hardy to zone five. The deciduous foliage releases a cinnamon-like fragrance when crushed. In addition, the nodding, yellow blossoms bring a spicy fragrance. The flowers open from April to early Summer in small, nodding, loose clusters. The fruits are edible.

Native to the Pacific Coast, flowering currant (*Ribes sanguineum*) is hardy to zone six. This reaches eight to 12 feet in height. The spineless stems are brownish-red. Four inches long, the deciduous foliage can have five lobes. The medium pink to white blossoms appear before the foliage in large, nodding clusters. This can start flowering in late Winter and continue into April. Various cultivars can be found.

Skimmia (*Skimmia spp.*)

These slow growing evergreens provide bees with nectar and pollen. They prefer cool temperate climates. Skimmias are adapted to salt spray. The shiny, simple foliage releases a scent when crushed. The blossoms, which vary in color, open terminally in dense, short clusters. Skimmias are suited to partial shade and full

sun. They tolerate most soils provided it is well drained and high in organic matter.

Skimmia x confusa is hardy to zone six. This hybrid has a mounding growth habit. Reaching two to ten feet in height, it has pointed foliage. The scented, creamy white blossoms open in cone-like clusters. There are numerous cultivars of this hybrid.

Summersweet (*Clethra spp.*)

Summersweets bring a crop of nectar. In general they prefer acid, moist soil and some shade. They can be deciduous or evergreen, depending on the climate. The alternate foliage is toothed. The small, scented, white blossoms are small. Appearing in July and August, they open in long, terminal clusters. A number of species are cultivated. Hardiness can vary from zone five to seven or so.

Cinnamon clethra (*Clethra acuminata*) is hardy to zone five. Native to the Southeast, this reaches 1½ feet in height, and is noted for its cinnamon colored bark. The deciduous foliage is eight inches long. It has feathery, creamy white to pure white blossoms beginning in late July. These open in long pendant clusters, 10 inches in length.

Summersweet (*Clethra alnifolia*) is the hardiest, thriving in zone three. It is native to the East. Around nine feet in height, this has broad, toothed, pointed deciduous foliage, five inches long. The scented white flowers open in terminal, erect spikes, six inches in length, from late July to October. One variety has pink tinged flowers. This tolerates salty conditions and partial shade. Numerous cultivars of this can be purchased. **BC**

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

For Your Queen Needs Call

Queen Cells Available –
Shipped By UPS

MIKSA HONEY FARMS

David & Linda Miksa
13404 Honeycomb Rd. • Groveland, FL 34736
Ph. 352-429-3447
Email miksahf@aol.com

THE WILBANKS APIARIES, INC.

SUMMER QUEEN PRICES AVAILABLE JUNE 1ST - NOVEMBER
Caged fresh from our yards. Available all summer and fall.



1-9	10-24	25-99	100-up
\$19.00	\$17.00	\$16.00	\$15.00

Queens Clipped \$2.50 ea. • Queens Marked \$2.50 ea. Queens can be shipped by Priority or Express Mail INSURED, or by UPS Next Day and 2nd Day UNINSURED

THREE BANDED ITALIAN QUEENS

Box 12
Claxton, GA 30417
912-739-4820
FAX: 912-739-4821

GLEANNINGS

JULY, 2012 • ALL THE NEWS THAT FITS

CALIFORNIA PEST PROTECTION, AND BORDER INSPECTIONS, TO SUFFER WITH BUDGET DEFICIT

A \$16 billion state budget shortfall in California will lead to cutbacks in border pest protection activities.

Dave Puglia, Sacramento-based senior vice president for Irvine, Calif.-based Western Growers, said California Department of Food and Agriculture Secretary Karen Ross briefed industry leaders May 14 with a plan that will require \$2.1 million in cuts from the agriculture budget to deal with what he called a "rolling crisis."

"It is very difficult to process another round of cuts to CDFA, minor though they may be on paper," Puglia said.

Budget stresses have resulted in \$31 million in cuts to the general fund support for the agriculture department in the last two years, he said. Those cuts represent about 30% of traditional general fund support for the department, Puglia said.

"The vast majority of those cuts are coming out of the plant side of CDFA, not the animal side," he said.

Puglia said Ross told industry leaders that the majority of the expected \$2.1 million in cuts may come out of the state's border inspection stations, potentially starting when the new fiscal year begins in July 1.

While Puglia credited the CDFA's Ross for implementing creative strategies to keep border inspection stations open with rotating hours, he said additional cuts will hurt.

"Major pathways still have 24/7 coverage, but those back road entry ways into the state will probably see very little border station activity," he said. "Our exposure (to pests and diseases) is being increased."

Cutting \$2.1 million from the CDFA budget will weaken protection for agriculture while not contributing much to solve the deficit crisis, he said.

"Every additional cut is deeper into the bone," he said.

The lack of funds will put more pressure on the industry to fund programs, but Puglia said the state's growers are already heavily burdened by fees and taxes not only from CDFA but other state agencies including the State Water Resources Control Board, Cal EPA and other agencies.

"The reality is that California farmers are already paying exorbitant fees to support state government programs," he said.

The total pro CDFA budget in 2012-13 is proposed at \$340 million, of which about \$63 million comes from the state's general fund, \$106 million comes from the federal budget, \$156 million comes from special/industry funds and \$14 million is from reimbursements.

Puglia said the industry is talking about other strategies to raise funds for support of agriculture programs.

"Everyone should be coming to the realization that the general fund dollars are going away and we've got to figure out a mechanism to make sure we can adequately fund protection and eradication of invasive pests without all of the costs falling strictly on agriculture," Barry Bedwell, president of the Fresno-based California Grape & Tree Fruit League, said in a comment about the crisis.

From The Packer Daily



INSECT POLLINATED CROPS, VALUE AT OVER \$15.12 BILLION. NEW STUDY

In the U.S., the cultivated area (hectares) and production (tonnes) of crops that require or benefit from insect pollination (directly dependent crops: apples, almonds, blueberries, cucurbits, etc.) increased from 1992, the first year in this study, through 1999 and continued near those levels through 2009; aggregate yield (tonnes/hectare) remained unchanged.

The value of directly dependent crops attributed to all insect pollination (2009 USD) decreased from \$14.29 billion in 1996, the first year for value data in this study, to \$10.69 billion in 2001, but increased thereafter, reaching \$15.12 billion by 2009.

The values attributed to honey bees and non-Apispollinators followed similar patterns, reaching \$11.68 billion and \$3.44 billion, respectively, by 2009. The cultivated area of crops grown from seeds resulting from insect pollination (indirectly dependent crops: legume hays, carrots, onions, etc.) was stable from 1992 through 1999, but has since

declined. Production of those crops also declined, albeit not as rapidly as the decline in cultivated area; this asymmetry was due to increases in aggregate yield.

The value of indirectly dependent crops attributed to insect pollination declined from \$15.45 billion in 1996 to \$12.00 billion in 2004, but has since trended upward. The value of indirectly dependent crops attributed to honey bees and non-Apis pollinators, exclusive of alfalfa leafcutter bees, has declined since 1996 to \$5.39 billion and \$1.15 billion, respectively in 2009. The value of alfalfa hay attributed to alfalfa leafcutter bees ranged between \$4.99 and \$7.04 billion.

Trend analysis demonstrates that US producers have a continued and significant need for insect pollinators and that a diminution in managed or wild pollinator populations could seriously threaten the continued production of insect pollinated crops and crops grown from seeds resulting from insect pollination.

Pub. in PLoS One, Nick Calderone

FRANCE BANS CRUISER OSR

France bans the pesticide Cruiser OSR, which contains the neo-nicotinoid insecticide thiamethoxam, for use on rapeseed.

The French Ministry of Ag acted after two studies published this year strongly suggested a link between increased use of neonicotinoid pesticides and global declines in populations of pollinating insects.

In the U.K., the Dept. of Environment, Food and Rural Affairs continues to investigate the two research reports – one by British scientists from the University of Stirling and the other by France's National Institute of Agronomic Research.

Neonicotinoid pesticides disrupt the nervous systems of pest insects such as aphids but also affect non-target species such as bees.

The French study found exposure

to non-lethal amounts affects bees' homing ability, putting colonies at risk of collapse.

French Agriculture Minister Stephane Le Foll says Cruiser OSR manufacturer Syngenta has a two-week period to produce its own evidence about the safety of Cruiser OSR, used for coating rape seeds.

Syngenta called the French ban a dark day for French and European agriculture and gave a dire warning of the loss of 30% of the French oilseed rape crop as a result.

The Swiss agro-chemical group says the ban was decided on the basis of one experimental study which has not been validated by experts.

"There are no negative effects on bees from our product Cruiser used as recommended according to lab and open field trials," it says.

Alan Harman

WINTER LOSSES DOWN. STILL TOO HIGH. SURVEY RESULTS

Total losses of managed honey bee colonies from all causes dropped to 21.9 percent nationwide for the 2011/2012 Winter, a decline of some eight percentage points or 27 percent from the approximately 30 percent average loss beekeepers have experienced in recent Winters, according to the latest annual survey conducted by the Bee Informed Partnership, the Apiary Inspectors of America and the United States Department of Agriculture (USDA).

"This is certainly an improvement over recent years, but it is still far too high a loss rate," says University of Maryland's Dennis vanEngelsdorp, the leader of the survey and a research scientist in the department of entomology at Maryland. "One in five bees lost is still huge and still quite a ways from the 13-14 percent loss that beekeepers say would be sustainable" says vanEngelsdorp, who authored the preliminary report on the groups' survey findings.

Understanding the health of bees and other native pollinators is important to ecosystems and our economy because of the crucial role pollinators play in plant reproduction. It is estimated that bees pollinate about a third of the food that we eat, at a value of about \$15 billion per year.

The groups' surveys for the previous five years found total colony losses of 30 percent in 2010/2011, 34 percent in 2009/2010, 29 percent in 2008/2009, 36 percent in 2007/2008 and 32 percent in 2006/2007.

vanEngelsdorp and other scientists involved in the survey say they don't know the reason for improved bee survival this Winter, but that the unusually warm Winter during 2011/2012 is one possible contributing factor. January 2012 ranks as the fourth warmest January in U.S. history. However they say no direct scientific investigation of the weather connection has been done.

"A warm Winter means less stress on bee colonies and may help them be more resistant to pathogens, parasites and other problems," said Jeff Pettis, co-leader of the survey and research leader of the Agricultural Research Service (ARS) Bee Research Laboratory in Beltsville, Md. ARS is USDA's chief intramural scientific research agency.

Of beekeepers who reported losing any colonies, 37 percent said they lost at least some of their colonies without the presence of dead bees, which is one of the defining

symptoms of colony collapse disorder (CCD), a serious problem that beekeepers began facing in 2006. Since this was an interview-based survey, it was not possible to confirm that these colonies had CCD or if the losses were the result of other causes that share the "absence of dead bees" symptom.

Beekeepers who reported colony losses with no dead bees present had average colony losses of 47 percent, compared to beekeepers who lost their colonies, but did report dead bees. Those beekeepers lost 19 percent of their colonies.

Last year, beekeepers who reported colony losses with no dead bee bodies present had average colony losses of 61 percent, compared to beekeepers who lost colonies but did report dead bees. They had 34 percent in losses.

"Despite intense efforts we still don't fully understand why bees are dying at such high rates," vanEngelsdorp says, "It seems likely that several factors, including pesticides, parasitic mites and diseases, and nutrition problems all play a contributing roll."

Almost half of responding beekeepers reported losses greater than 13.6 percent, the level of loss that beekeepers have stated would be acceptable for their operations. Continued losses above that level threaten the economic sustainability of commercial beekeeping.

A total of 5,543 U.S. beekeepers responded to the online survey. Collectively, the responding beekeepers managed over 14.6 percent of the country's estimated 2.49 million colonies. A complete analysis of the survey data will be published later this year. The abstract can be found at: <http://beeinformed.org/2012/05/winter2012/>.

More information about colony collapse disorder can be found at www.ars.usda.gov/ccd.

The Bee Informed Partnership is funded by the National Institute of Food and Agriculture, USDA.



A BETTER GUT FEELING

Swedish researchers have a gut feeling that they have made a step towards solving the mystery of both bee deaths and antibiotic resistance.

The collaboration between researchers at Lund University, the Swedish University of Agricultural Sciences and Karolinska Institutet say they found wild honey contains billions of healthy lactic acid bacteria of 13 different types. By comparison, there are only one to three different types found in commercial probiotic products.

The honey bees have used these bacteria for 80 million years to produce and protect their honey and their bee bread (bee pollen), which they produce to feed the entire bee colony.

The researchers say they have now also shown that the healthy lactic acid bacteria combat the two most serious bacterial diseases to affect honey bees.

In a report in the scientific journal PLoS ONE, the researchers describe how the bees have these healthy bacteria in their honey stomachs and they get the bacteria as newborns from the adult bees that feed them.

The Swedish study also shows that bees' healthy bacteria die when beekeepers treat bees preventively with antibiotics, which primarily happens in the U.S.

The bees have their own defense system against disease in the form

of cooperative healthy bacteria. However, this system is weakened in commercially farmed bees that are treated with antibiotics, suffer stress, eat synthetic food instead of their own honey and bee bread and are forced to fly in fields sprayed with pesticides.

"Our results provide the research community with an undiscovered key that could explain why bees are dying worldwide in the mysterious Colony Collapse Disorder," researcher Tobias Olofsson says.

The researchers have also seen that large quantities of harmful microorganisms such as bacteria, yeasts and fungi are found in the nectar and pollen that the bees collect from flowers to make honey and bee bread.

These microorganisms could destroy the food through fermentation and mould in just a couple of hours, but in fact, the healthy bacteria in the bees' stomachs kill all the microorganisms.

"As humans have learnt to use honey to treat sore throats, colds and wounds, our hypothesis is that the healthy bee bacteria can also kill harmful disease bacteria in humans, Lund University researcher Alejandra Vasquez says.

"We have preliminary, unpublished results which show that this could be a new tool to complement or even replace antibiotics."

Alan Harman

Get The Latest Honey Bee & Beekeeping News FREE From Bee Culture. Sign Up For THE BUZZ At www.Beeculture.com/Buzz Today!

millerbeesupply.com
888-848-5184
orders@millerbeesupply.com
Manufacturer Of Quality
Beekeeping Supplies Since 1976

Miller BEE SUPPLY

Turn Your Honey Into Money Faster!

NEW!

millerbeesupply.com/ExtractorB



Quality Apiary Supplies

available in Pennsylvania
and Washington State

- Place your order with the nearest branch
- Accepting dealership inquiries

10-frame Woodenware:

(Unassembled commercial low volume prices)

Telescoping Lids	\$ 13.03
Inner Covers (raised panel)	\$ 4.86
Top Feeders (with floats)	\$ 12.57
Shallow Supers (finger joint)	\$ 6.47
Medium Supers (finger joint)	\$ 7.06
Deep Hive Bodies (finger joint)	\$ 10.14
Frames (any size)	\$ 0.79
Economy Nucs	\$ 13.38

Assembled Screened Bottom Boards with trays... \$ 19.16

Order from:

BEELINE
APIARIES & WOODENWARE

Pennsylvania:

5765 Main Road, Bedford, PA 15522
814-585-4699 Fax: 814-847-9350
beeline@abcmailbox

Washington:

19019 Moon Road SW, Rochester, WA 98579
360-280-5274 hjweaver@emypeople.net

Other products available. Call for a free catalog.

Display Advertisers

Bees & Queens

Bee Weaver Apiaries	20
Buzz's Bees	50
Ferguson Apiaries	70
Gardner's Apiaries	56
Glenn Apiaries	53
Hardeman Apiaries	70
Harris Apiaries	76
Jester Bee Company	53
Koehnen, C.F. & Sons	79
Miksa Honey Farm	69
Nina's Queens	50
Old Sol Apiaries	79
Olivarez Honey Bees Inc.	8
Olympic Wilderness	70
Pendell Apiaries	32,79
Purvis Queen Bees	76
Rossman Apiaries	6
Schwartz Apiaries	50
Spell Bee Company	56
Strachan Apiaries	65
Taber's Queens	70
Weaver, R Apiaries	79
Wilbanks Apiaries	69
Z's Bees	43

Associations/Education

American Bee Journal	53
American Beekeeping Federation	65
American Honey Producers	50
Australia's Honeybee News	53
Back Home Magazine	70
Beekeepers Quarterly	28
Eastern Apicultural Soc	49

Heartland Apicultural Soc	55
Mother Earth News	19
Wicwas Press	1

Equipment

A&O Hummer Bee Forklift	33
Bee-Z-Smoker	66
CC Pollen	20
Cowen Mfg.	55
Custom Hats & Veils	28
Dakota Guinness	55
EcoBeeBox	20
EZ Pry Hive Tool	43
Forest Hill Woodworking	70
Golden Bee Products	79
Humble Abodes Woodenware ...	79
IMN Queen Rearing Technique ..	53
Pierco Frames	38
Swinger Forklift	74
Ultimate Hive Cover	28
Wax Melters Equipment	50

Related Items

Angel Bottles	53
Bee Dun Bee Repellent	3
Bee Weaver Bee Goods	20
BeeInformed.org	58
BL Plastic Containers	50
Branding Irons	28
Camlocks	46
Feed Bee	3
Fixit Hive Repair	53
Global Patties	28
GloryBee	8
Honey Bee Power Booster	28
J&B Bee Wear	78

Medivet	78
Miteaway II	37
Mite Zapper	56
Mother Lode Products	16
Nite Guard	62
NOD Bee Cozy	65
Nosevit	4,20
Premier 1 Fencing	3
R. M. Farms	70
S & Bee Containers	50
Sailor Plastics, Containers	79
Vermont Flexi Pumps	16

Suppliers

B&B Honey Farm	79
BBWear	55
Beeline Apiaries	77
Blue Sky Bee Supplies	
..... Ins. Back	
Brushy Mountain ... 62, Ins. Front	
Dadant	47,59
Honey Bee Ware	50
Kelley, Walter	2
Mann Lake Supply	Back Cover
.....	34
Maxant Industries	76
Miller Bee Supply	73
Queen Right Colonies	76
Root Publications	7,11,72
Ross Rounds	4
Rossman Apiaries	6
Ruhl Bee Supply	3
Sherriff, B.J.	66
Simpson's Bee Supply	50
Thorne	65

When I mentioned to my *Bee Culture* editor that my last 10 60-pound buckets of 2011 honey fermented, he was quick with the quip: "You should make mead," he said jovially.

"I'm already halfway there," I replied.

Here in Colorado, there is no bad honey. Well, knapweed, maybe, but even it mellows with age. So I was alarmed this spring when I melted a bucket of last year's alfalfa/clover honey, and it gave off the most peculiar odor. It didn't reek, and it was edible, like imported honey in those little plastic packets. But it wasn't right.

I knew the smell. I've made my own (bad) beer and wine. This honey had fermented.

I'd heard of this. When I procured some very thin *Melipona* stingless bee honey in the Yucatan last Fall, I was cautioned that it might ferment, so I stored it in the refrigerator. It kept very nicely there. I found its almost bitter flavor a perfect complement to my morning coffee.

All honey contains naturally occurring yeasts. But my honey had never fermented before. I knew that fermentation was related to high water content in honey, and in particular to extracting uncapped frames of **not-fully-cured** nectar. But you're always going to have some of that when you harvest in the Fall.

And while honey can absorb moisture from the air, where I live, it's pretty dry. I assumed fermenting honey was a problem for beekeepers in soggy climes.

I should mention that until recently I melted and sold my 2011 high altitude wildflower honey and had no **fermentation problems**. It was only when I ran out of wildflower and tapped my little reservoir of valley honey that I discovered my blunder.

I say blunder, because this would have been avoidable, had I known what I know now. I learned that honey ferments most rapidly at temperatures conducive to rapid **granulation**. **This is around 60°** – the same temperature at which I store my honey in the house during the Winter. And I learned that when **honey is stored below 50°**, fermentation is basically not a problem. It would have been relatively easy for me to store my honey cold, had I anticipated a problem.

I learned that if the glucose in honey granulates first, this can leave the fructose part still in solution, but with higher water content. Uh-oh!

None of this explains why fermentation taught me its unforgettable lesson this year of all years, since I was able to successfully store honey in the house in the past. But one thing we do know is that all honey is unique. Every floral type is unique. Each year is different. This time the gods conspired to make fermentation happen. Beyond that, I can only conjecture.

I'm not an expert on bees, but I'm always happy to listen to a couple. The problem with experts, however, is that they so often disagree! Then what do you do? (Pay attention, all you novice beekeepers: There's a lesson here!)

Expert #1 said, "What are you going to do with all that spoiled honey?"

I said, "Feed it to my little darlings, I suppose."

He said, "I wouldn't, unless you want to give them dysentery."

"Oh," I said.

But when I told my sad tale to Expert #2, he had a different take. Ever the pragmatist, he said "It might give them dysentery in the winter, but I'd feed it in the spring."

Sometimes you go with your gut. I chose Expert #2's advice.

How else am I going to get rid of this stuff? I'm pretty sure they don't want it at the dump! I have a compost pile, but I didn't want every honey bee, yellow jacket, skunk and bear in the valley pawing through it.

I also like this advice, because now, in late May, I'm feeding bees, and they're lapping up my fermented honey like drunks at closing time.

I don't know what happened to our dandelion honey flow. The dandelions bloomed all right, and we had some favorable weather, but the best I can say is that my good bees are getting by. Weaker hives are eating more carbs than they're bringing in. The dinks and late bloomers need help.

Is it the drought? First we had a mild, low-snow Winter. Then we set high-temperature records all of March. Now, in late May, the weather's more like normal, or even a little on the cool side, but we can't buy a raindrop.

Yesterday I checked my bees on the Flat Tops at just under 9,000 feet. They're nestled in a sea of dandelions, but they're not making honey. A few hives were on the verge of starvation, so I gave them a heaping helping of fermented honey.



Little Darlings Almost Mead

Ed Colby

BOTTOM BOARD