

Premises Liability . . . 22
Soybean Rust . . . 29
Integrated Beekeeping . . . 35
Almond Chronicles . . . 38
Perfect Swarm . . . 52

MAY 2005

Bee Culture



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Apple Blossoms offer nectar and pollen for honey bees and pollination fees for beekeepers. (photo by William Mondjack, Whitehall Pennsylvania)

Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

MAY 2005 VOLUME 133 NUMBER 5



FEATURES

COVERT BEEKEEPER 11

How to hide your hobby.

Lela Dowling

PREMISES LIABILITY 22

What every beekeeper needs to know.

Sylvia A Ezenwa, J D

DOUBLE DOUBLE GRAFTING GRAFTING 27

Is 'more is better' right, or are looks deceiving?

Sue Cobey

SOYBEAN RUST 29

Should beekeepers be concerned?

Audrey Sheridan and Clarence Collison

ALMOND CHRONICLES 38

Adventures in small scale almond pollination.

John Jacob

STING STOPPER 43

This stuff stops the hurt.

Karen Kirsch

MAY, SHE WILL 45

Varietal honey is worth more money. Use your journal to get these crops.

Ann Harman

RIDING WITH THE BIG BOYS 49

For commercial beekeepers, keeping bees is fast, efficient and not terribly glamorous.

Dick Marron

THE PERFECT SWARM 52

Sometimes things go the right way.

Mike Niemeyer

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Subscription Information

U.S., one year, \$21.50; two years, \$41. Newsstand price: \$3.50. All other countries, (U.S. Currency only), \$15.00 per year additional for postage. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), May 2005, Volume 133, Issue 5, is published monthly by The Root Candle Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Advertising

For information on advertising contact Dawn Feagan at 800.289.7668. Ext. 3220

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V800.289.7668 V330.725.6677 F330.725.5624 www.BeeCulture.com
email: info@BeeCulture.com

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

Opinions expressed in articles or columns in this magazine are not necessarily those of the Editor or Publisher.

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Bee Culture The Magazine of American Beekeeping

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DEPARTMENTS & COLUMNS

MAILBOX 7

THE INNER COVER 10

It sorts itself out.

Kim Flottum

NEW PRODUCTS 12

Honey Supercell plastic frames, one-piece plastic frame and Mite-Away II Formic Acid. Also, Backyard Beekeeper new book.

AIA, AAPA, AND ABRC 17

What do all those letters mean?

Malcolm Sanford

SOCIO-NEURAL-GENOMIC, HUH WHAT? 19

Much of the best research using bees today is extraordinarily technological and complex, focused on basic science more than beekeeping applications.

Mark Winston

HONEY PLANTS 32

Ornamental fruits. Spectacular Spring flowers for your bees.

Connie Krochmal

INTEGRATED BEEKEEPING 35

Making bees a meaningful part of your life.

James E. Tew

DO YOU KNOW? 53

What do you know about bee breeding?

Clarence Collison

GLEANINGS 57

All the news that fits.

CLASSIFIED ADS 61

Buying and selling.

BOTTOM BOARD 64

Old monster movies.

Peter Sieling

New, New

Plants and Honey Bees
(X135) \$35

This book is especially for beekeepers who want to know the fundamentals and more advanced aspects of floral biology.

Plants and Honey Bees

Their Relationships



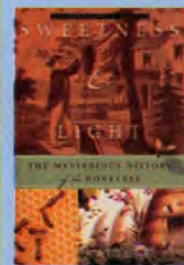
DAVID AXSON
SALLY WICKHAM

Bees In America (X136) \$30

The honey bee isn't native to the U.S., but it's hard to imagine the country without it. Horn provides a wealth of worthy material about bees in America.



TAMMY HORN

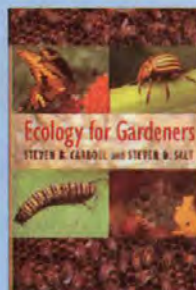


Sweetness & Light (X138)
\$25

From the bee-inspired musings and works of artists and thinkers such as Aristotle and Shakespeare, Charles Darwin, and Frank Lloyd Wright.



Backyard Beekeeping
(X129) \$14.99 (James Tew)
This book answers all the beginning questions, takes care of the disease and pests, gets you started, keeps you going.



Ecology For Gardeners
(X125) \$33

This book explores the interaction between a diversity of organisms that occupy your garden. If you garden and want to know more about what's going on, this is the book for you.

BAD BEEKEEPING



RON MIESHA

Bad Beekeeping
(X137) \$25

Follow a young man from Pennsylvania as he drops into the prairie badlands of southern Saskatchewan, buys a honey ranch and keeps the bees that make the honey.

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MAILBOX

'Stick' to Nails, Glue Views

In response to the letter by Russ Walker about assembling frames and supers with glue – been there – done that – and *many was the time that I regretted it*. Before I explain why, let's go back to the time it all started.

In the 60s I was looking through an A.I. Root catalog when I saw a picture of a boy hanging in the air by holding the end bar of a deep frame that was suspended overhead. It read – Glue, stronger than nails. It then gave information such as being water proof, and dry resin glue saved the cost of shipping water, etc. I thought, that's great. That 's the way to go.

I ordered glue and assembled a lot of frames using glue alone. They were held together with rubber bands until the glue set. I used a square to make sure they were square and sighted across the side of the top and bottom bars to be sure they were parallel. I wanted frames that were straight, square and strong so they would last a long time and be trouble free. It took a lot of time but I felt it would be worth the extra effort in the long run.

I later put some supers together using fewer nails and glue.

They were all rigid with no give in the joints and very strong. They would have broken instead of the joints coming apart.

Now, let's go forward some years – five, 10 or whatever. I don't recall.

From time to time a joint would be loose or a top or bottom bar would come off. This required replacing the frame or repairing the damaged ones, often in the beeyard.

As time went by, it happened more frequently. A bad situation was constantly getting worse. To remedy the problem, I began nailing all frames that were not

nailed – I used three 1¼ inch nails in the top bar (each end). All three were down and none cross-wise as some do. Same size nails were used in the bottom bar. I was already aware that shorter nails usually cause trouble. Most of the nailing was done as the equipment went through the honey house.

I concluded that glue was a waste of time and money and quit using it. I advise those who use glue to also use plenty of nails of good length and size.

I doubt that any glue will hold up for a long time when exposed to the changing temperatures and humidity (high to soaking wet) that exists in beehives. I believe glue and wood shrinks and expands at different rates in relation to temperature and humidity changes. If so, this can cause the joints to fail.

Whether to buy assembled or unassembled equipment depends upon whether you choose to spend extra time or extra money.

Some frames warp after being put into service. They can be twisted to straighten the comb if glue is not used because the nails will give.

The big problem with new ideas is that you never know how well they will work until after you have tried them. Flaws may not become apparent until much later.

Rufus Payne
Appalachia, VA

Beware of Glue-only Frame Assembly! Russ Walker advised us in a "Mailbox" letter in March to assemble frames using Titebond II glue instead of nails. No doubt that would be much faster, and maybe if you don't misuse your frames like some of us do, and if they're well made, you might get by with that. But there are a few warnings I would like to make to save someone out there from

realizing a mistake after his frames start flying apart in the extractor

While Titebond II glue may be stronger than wood when it is new on perfectly-joined edge grain, we need to keep in mind that very few things in this life are perfect, and even well-made frames may not always fit perfectly. Even the best glue does not hold well when there is less than ideal contact, end-grain, which is what about half of the surfaces are on frame joints.

Even if Titebond II joints were strong enough when they're new, don't forget that it is a kind of plastic (polyvinyl acetate) which is bound to get brittle when it gets old. Then it'll only take one knock to break those joints and there won't be anything but the comb to hold your frame together.

If the time comes when we can't get plastic (What a blessing!), I don't suppose Titebond II will be an exception. I think I'll stick with nails even if it's slow. Anyway, what's the hurry? I am where I want to be for now. And dinner's almost ready.

Melvin Yoder
Delano, TN

I always read letters to the editor in newspapers, magazines or anywhere else. At best they are informative, at worst they infuriate, but mostly they are just enjoyable to read. It keeps you in touch with other average individuals or at least those that like to write letters. Lists like Bee-L prove there are many more folks out there that probably would agree. In last month's issue of *Bee Culture* there is a letter to the editor where someone, new to beekeeping, mentions his disdain for all the time it takes to nail up a frame or box. I am just the opposite, I find banging nails with a hammer quite relaxing. I will

Continued on Next Page

MAILBOX

agree though it does take time which is why I invested in a compressor and a pneumatic stapler (The compressor continues to be one of the best tools I ever purchased. I can't believe how often I use it for a wide range of jobs.)

Later in the letter the writer seems to criticize the use of plastic frames/foundation. When I first started keeping bees and assembling frames I found I hated wiring them. My second year I switched to Duragilt. I had great luck with that and, unlike others have reported, have had very few problems with the plastic losing its coating. Most of those frames are still in use. The time savings alone was worth it. I now primarily use plastic foundation and sometimes plastic frames. I have good results and it saves time.

The gentlemen in the letter mentions using only glue to assemble frames, stating that modern glues like Titebond II are more than enough to hold frames together. IMHO he may get away with this on frames used only in honey supers, but I doubt he will be happy in a few years when trying to pry well propolized frames in a brood chamber. He is an engineer (but not a chemist) and touts the bonding strength of modern glues. I disagree. Titebond II is not waterproof. That's why they just introduced Titebond III. The inside of a bee colony is a high humidity area and over time most wood glues will break down. If you ever refurbish an old frame you usually notice that when the comb is removed the joints are loose and have to be renailed. If the original nails were not there, the frame would fall apart.

Wood glue 101. Not that long ago there were basically two glues on the market. White glue for crafts and yellow glue for wood. Being a good woodworker I would never have considered switching them. White for crafts yellow for wood, it's the law. Right? In reality they are very close with just some yellow coloring added to make the wood glue. These

polyvinyl acetate (PVA) type glues were and still are great. When used on porous materials such as wood and correctly applied they form a bond that is stronger than the wood itself. The only problem is moisture.

Researchers then came up with the next generation of glues (Titebond II et al) that were moisture resistant, not waterproof. They will bond much better in areas that occasionally get wet but would also break down when constantly exposed to moisture. I think the new Titebond III will hold up much better. I only hope that the letter writer to BC discovers this product sooner rather than later. There are other types of glues that are completely waterproof. These are polyurethane types that use moisture to activate the bond. Their strength is incredible, however I think they have two drawbacks, at least for use in beekeeping. They are more expensive with a shorter shelf life, and some if not all contain formaldehyde, a probable human carcinogen. (We are producing a food product after all).

I have some pretty good information on this subject. For years I have been using a glue that has had one of the highest moisture resistance ratings (ANSI-HPVA [HP-1-1994] Type 2) available. It is not sold on the consumer market, but rather to industry, primarily the furniture manufacturers. One application it has been used for is to manufacturer butcher blocks/cutting boards (high moisture/food contact). Although I have what I consider a pretty good glue, I still nail everything and if I had to choose between nails and glue, I would go with the nails.

Ron Bogansky
Kutztown, PA

Almond \$\$\$ For Research

The record high prices currently being paid for almond pollination offers the bee industry a tremendous opportunity to raise money for research. At today's prices, almond growers should not bat an eye at paying an additional

\$2/colony, especially if they knew that the money was going to bee research. Why not add \$2/colony to your 2006 almond pollination price and direct this extra money to bee research?

Joe Traynor
Bakersfield, CA

'Honey' Butter Popcorn

I thought you might be interested in this package showing the dripping honey dipper and "Honey Butter" name on this product containing no honey.

I am a sidliner with about 120 hives in West Central Missouri. I sell all my honey in grocery stores and orchard markets in a four county area. I enjoy your magazine very much and think you do a great job. Keep up the good work.

Bob Rauch
Higginsville, MO

Editor's Note: After receiving Mr Rauch's note we went onto Betty Crocker's website (www.bettycrocker.com) and sent them an email questioning the use of the word honey when, indeed, there is no honey in this product. After a couple of weeks, they finally responded and here is what the email said:

"Thank you for contacting the General Mills Consumer Services Department with your inquiry. We would like to be able to answer all the questions we receive, however the information you have requested is proprietary."

Bee Culture encourages each of our readers to visit the website and challenge General Mills on this issue.



MAILBOX

Research Help

In the February issue of *Bee Culture* Dr Winston reviewed and discussed a research project carried out by his student, Nathan Rice, and published in *ABJ* last Summer. Dr Winston said the research was good and helpful but for it to be really effective the scope of the study would have had to be nationwide. As it was the project cost \$75,000.

A year or more ago Dr Winston had also written a column for *Bee Culture* in which he explained the process and difficulty of formulating a research project, getting funding for it and then doing it.

Research is vital to beekeeping. It appears that a large amount of research funding is used up by obtaining equipment, stocking hives, and ordinary beekeeping activities, some of which is performed by students but some by hired helpers.

Beekeepers are always carrying on research of their own in their own limited way. I have made a lot of little studies to satisfy my own curiosity over the last 30 years and lots of others have too. We represent a huge resource in beekeeping experience willing to take part in a research project if we only had some instruction in what to do and how it needs to be done and recorded.

I have volunteered before and have supervised volunteers. I know that sometimes volunteers can make a project harder than it should be because they do not understand what is really important in it. If a researcher were to use beekeepers far from his university he could really end up with a vast amount of unusable data.

I believe there is a solution that would help some of us get involved and produce

results a researcher could rely on and use with confidence.

There are at least three organizations that already have the rudimentary setup to train volunteer research assistants, EAS, WAS, and HAS.

Some or all of these groups have Master Beekeeper programs. They could also initiate Research Assistant programs. Leadership of these organizations could get together with interested researchers to design a program that would teach ordinary beekeepers the methods and importance of conducting a study of nearly anything from a chemical treatment to evaluating resistance in a given line of bees or the practicality of a new piece of equipment.

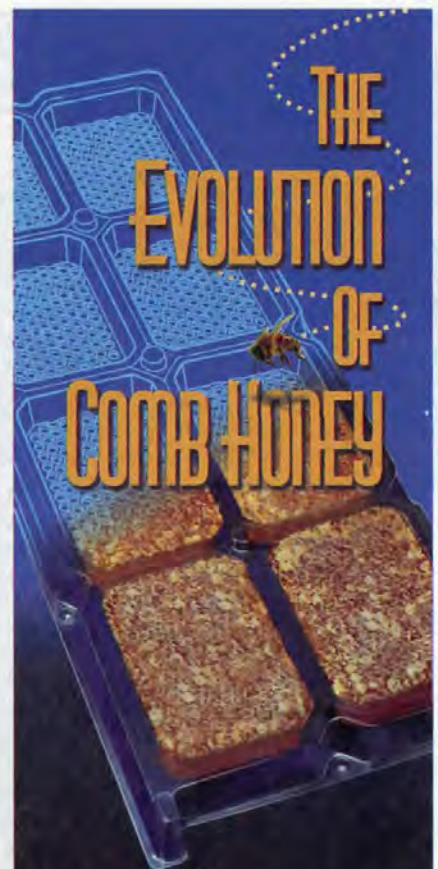
Dr. Winston will be at EAS in Ohio this year. There is an opportunity to at least explore the possibility of this potentially beneficial partnership. There are a lot of us who fell in love with bees too late to go to college but now have the time, some of the experience to help and some of the resources.

Henry Harris
Elkhart, Indiana

Beekeeper's Headstone

The picture of Bob Beauvais' headstone in the February issue of *Bee Culture* prompted me to send in this one. My good friend, Frank Golden who, with Jerald Ely, started our association, died in 1999. The stone is polished granite, and the child pictured with the beekeeper is Frank's five year old daughter. She asked to be in the scene.

Dick Chapin
Montrose, PA



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BEE-O-PAC is made of food grade P.E.T. plastic, formed to fit a standard 6 5/8" super. The honey comb pattern embossed on the pac's eliminate the need for foundation wax.

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INNER COVER

Maybe we're looking at this all wrong. Maybe it's time we rethought this whole process. Bear with me a bit here while we explore an alternate route, the road untraveled, until now.

For years our industry has been struggling to find bees that are tough enough to survive Winter, mites and fork-lifts. We want them to actu-

ally live through all this. Why? Really. Why?

Bees, as bees, are a commodity. Like feeder calves, fryer chickens and pond-raised fish. We raise bees to produce more bees. Bees as a commodity. Bees that tolerate some of our problems. Bees to make more bees, early enough for pollination, and long enough to make lots of honey. Right? Right.

It's not working. This past Spring is the real story. Bees – dead in droves. Overwintered bees didn't, or didn't very well, depending on who you talk to. But in February we discovered we could, indeed, import bees. Bees for pollination.

Now we don't want feeder calves, fryer chickens and pond-raised fish to actually live long, healthy, prosperous lives, you know. We want them to live just long enough to fulfill their destiny – a burger, chicken fingers and a fish sandwich, with fries to go, please. Oh, and a biggie soda. That's what we want. Really.

So why do we want bees to be perennials, instead of annuals? Annuals was the management style of choice for years in Canada when packages from the U.S. cost less to import, install and build up than it cost to overwinter a colony. It was common in the mid-west years ago, too. Not so many years ago, actually.

The advantage of this was that input costs consisted of installation labor and feed to the honey flow. Super, harvest and vacation someplace warm. The bees were blown out or gassed and next Spring – more packages. On a commercial scale it didn't get a lot of attention. A few years ago a writer here in the states suggested this as a management style for the rest of us, now that mites are everywhere. This avoided medication costs and potential crop contamination, along with messing up the wax. And, you harvested more honey. Sometimes lots more.

At the time, it appeared this wasn't a very popular idea. But with the contamination costs of wax replacement, chemical and application costs, feed and fuel and labor costs – maybe it's time to revisit this management style.

Horrors!! Kill Bees!!!!???!?

Well, why not? Why spend money on chemicals, labor, resistant queen development, wax replacement, contamination scares, Wintering and still more replacement costs? Rather, why not be raising a bazillion packages in *Varroa*- and AFB-free places and send them here each Spring. Why not produce bees that simply produce bees and honey – like we did so well 50 years ago.

Think of it. Zillions of packages arriving early each Spring in the far south and west and established with natural nectar and pollen, or HFCS and protein food. By pollination time they're built up to the eight or 10 frames growers want. From there to honey fields in all parts of the country to grow and build and make honey to harvest that Fall. Then, *all* the honey is harvested, the bees dispatched and the empty equipment returned south.

For those of us who don't move, packages could simply be mailed to me, here in Ohio, at a later date, spreading out the shipping

season for those producing the packages so far away. And it's the same – no chemicals, no contamination, no wintering costs, and lots of honey from bees selected to build fast, fast, fast and simply make honey.

Single focused bees won't need to worry about hygienic behavior or other mite or disease resistant traits, or reducing populations so they Winter well with little food, or buildup fast, or slow, in the Spring, or anything except collecting lots and lots of nectar, all Summer long.

Everybody, it seems, is outsourcing some aspect of manufacturing. Why not beekeeping? We'll be importing the manufacturing capability, the tools as it were, and supplying raw materials.

A long term affect will certainly be the question of honey bee research. What will be the incentive to spend millions of dollars to discover mite or disease resistant bees, when we can get pest and disease free bees from off shore? Why should U.S. taxpayers continue to foot that bill? Why would they? And why would U.S. beekeepers continue to buy SHB, *Varroa*, TMite and RAFB? Why?

We have for years whined about research dollars to support this industry so we have healthy honey bees for pollination. Well, that doesn't hold any more, does it? In fact, we don't have healthy honey bees, but now we can get them somewhere else.

U.S. beekeepers can, using our technological advantages, migrate these off shore bees anywhere at low cost, pollinate a multitude of crops in a single season, and produce (probably low cost) honey – all with the same bees. Is this any different than using the foreign made frames inside the boxes, or the foreign made tractors farmers are using to produce crops in Iowa? I don't think so.

If I were a queen or package producer, I'd be wondering about my future.

Continued on Page 55

It Sorts Itself Out

'HOW TO HIDE YOUR HOBBY' PRESENTS; 'THE COVERT BEEKEEPER'

HOO-YAH!...

WITH OPEN SPACE SHRINKING AND CITY RULES AND REGULATIONS ON THE RISE, WHAT'S A BACKYARD HOBBYIST BEEKEEPER TO DO...?

...QUEEN BEE TO DRONE ONE, ALL CLEAR - PROCEED TO GAZEBO, OVER.

ROGER, QUEEN BEE

HERE'S A FEW USEFUL TIPS!

FIRST, IDENTIFY POSSIBLE PROBLEM NEIGHBORS...

SNOOP!

THIS GUY NEVER LEAVES HIS TV SET - NO PROBLEM HERE!

...AND IT'S A HOME RUN...

THIS LADY LOVES HER GARDEN. BUY HER SILENCE WITH FRESH HONEY AND A LECTURE ON POLLINATION AND YOU'RE IN!

UH-OH, BORED RETIREE AND NEIGHBORHOOD WATCH DOG, POTENTIAL WHISTLE-BLOWER HERE!...

HMMM...

NEXT, DISGUISE YOUR HIVES TO BLEND IN WITH THE TYPICAL URBAN BACKYARD...

'B.B.Q. BEEHIVE' VERY POPULAR!

SWARM

I'M SMOKING A BRISKET!...

OR TRY THE 'PLANTER BOX CAMO' WITH FAKE FOLIAGE ON TOP...

BIRD HOUSES MAKE GREAT NUC'S!

LOOSE CLOTHING WORN OVER YOUR BEESUIT WILL DIVERT ATTENTION...

HAWAIIAN MUUMUU AND BIG-FLOPPY SUNHAT

OLD HOT TUB MAKES GREAT HONEY BOTTLING TANK. PUT A SHEET OF GLASS OVER IT AND YOU HAVE AN AWESOME SOLAR MELTER!...

KEEPS IT WARM, TOO!

BLAME ANTS ON FRAT HOUSE ACROSS STREET

ALWAYS HAVE AN EXCUSE READY FOR OTHER SIGNS OF CLANDESTINE BEEKEEPING, LIKE STING WELTS...

OH THAT? MY ACUPUNCTURIST IS FRESH OUT OF TRAINING, HA, HA,

HMMM...

NEXT WEEK ON 'HOW TO HIDE YOUR HOBBY!'

'PIGKEEPING IN THE CITY'

WRITTEN AND ILLUSTRATED BY LELA (BEEHIVE IN MY GAZEBO? YOU MUST BE MISTAKEN!) DOWLING ©05

Look What's New



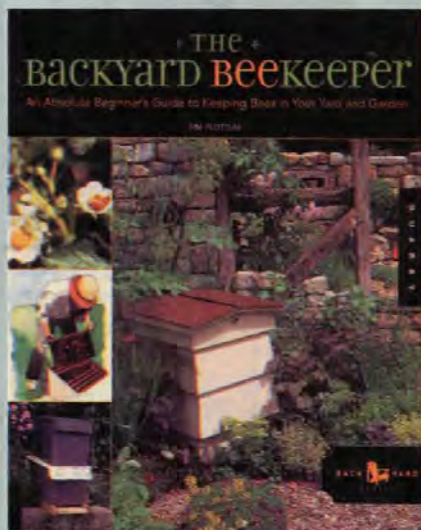
Honey Supercell all plastic frames. A new, heavy duty all plastic frame, in three sizes (6¼", 7¼" and 9-1/8") is available from Super Cell, P.O. Box 762, Westmorland, CA92281. Cell size is 4.9mm on the 9-1/8", and 6mm on small frames for easy honey removal.

These frames are solid, and dependable. The 6¼" frame weighs 1 lb., 2 oz. The 9-1/8" are built to fit nine/super, with just a bit of extra room. They can be waxed if ordered as such. See more at www.honeysupercell.com.

More plastic. A one-piece, all plastic super is now available also. Made from food grade polypropylene with a U.V. inhibitor, the white box comes with knurled edges for reduced slipping, external cross supports, built-in handles on two sides and rabbets designed exactly for Pierco one-piece frames. Additional colors and branding available for extra cost. 9-5/8 super weighs 5.12 lbs. Available from C.H. Whither Apiaries, Bees Forever Plastic, 16730 County Road 96, Woodland, CA 95695, 530.701.3505.



Mite-Away II Formic Acid pads received a Section 3, General Use permit in April. Effective in hives with brood, it has 90%+ control with little or no queen loss, and only minimal brood loss. Pre-soaked, non-reusable pads are applied to the top of a colony already equipped with a one-inch rim to accommodate the pad. Pads are used according to label instructions depending on location, temperature and time of year. For more information contact www.miteaway.com, or call 866.483.2929 for local dealers.



The Backyard Beekeeper, by Kim Flottum. Published by Quarry Books/Rockport Press. 168 pages, 8" x 10", over 100 color photos, soft cover. \$25. Available from Root Publishing, X141.

This introductory book is aimed at people who are accustomed to the outdoors, gardening and yard work, and are curious about having bees in the garden for pollination, a hobby to study, and perhaps a bit of honey to cook with and beeswax to make candles and creams from.

It is definitely for people who do not have lots of time, and are not interested in being wood workers or puzzle masters when it comes to putting things together. Further, it speaks to those who think twice about heavy lifting and hard work. The thrust of the introduction is to acquire eight-frame, preassembled equipment and save time and energy getting started.

The book examines basic and intermediate bee biology, fundamental management and harvesting

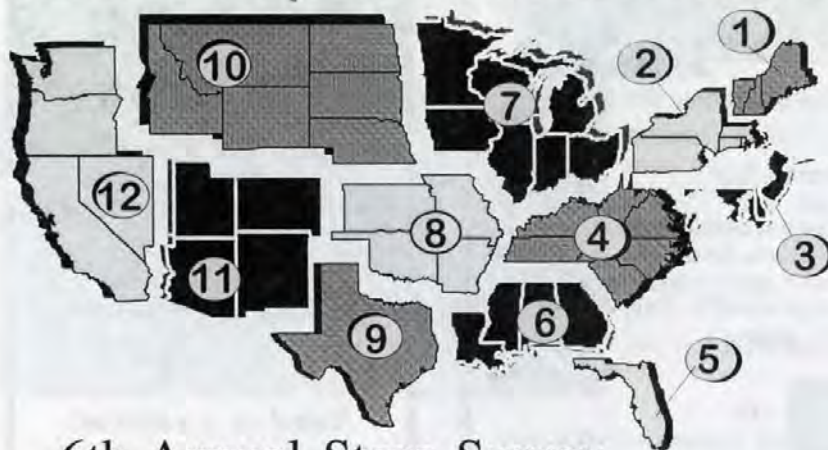
skills, all in size eight rather than 10. And, it focuses on the things that most books ignore (because writers usually take too many things for granted), like good hive stands, record keeping, garden pollination, what to do with too much honey and what to use it for. Plus, making candles and soap and creams with beeswax.

Pest and disease control are handled with least toxic techniques in mind always, and safe beekeeping – from good neighbor relations to safe lifting are all covered. A good index, glossary and reference section are included. This book is different. Well written, easy to read, excellent photos and the latest information. Definitely a breath of fresh air.

"Refreshingly useful."
– James E. Tew

"The most informative book I've seen in a long time."
– Mark Winston

MAY - REGIONAL HONEY PRICE REPORT



Percent of Shelf Space			
	2003	2004	2005
6 oz.	2%	2.6%	3.0%
1/2# gl/pl	8.3	8.3	6.9
12 oz. pl.	20.4	23.3	28.7
1#	19.9	18.7	19.0
2#	12.2	11.5	10.8
Pint	6.3	4.2	5.0
Quart	5.6	3.3	4.1
5#	4.0	5.7	3.1
Cremed	9.1	7.5	6.6
Comb	2.2	4.6	1.6
Other	7.6	7.6	10.4
	97.6	97.3	99.2

(Not 100% due to rounding.)

6th Annual Store Survey

The average number of rows (or fronts or facings) in our store survey dropped 26% this year from the six-year high of 18.4 last year to 13.6 this year. That's down, too, over 6% from the six-year average of 14.5 rows. Let's hope this isn't a trend. Or rather, maybe it is. Perhaps retail honey sales are moving in a different direction - away from the mass consumer market, and toward more specialized outlets.

This is somewhat supported by the fact that there's a big jump in the total number of brands stores are carrying. Local brands are up, which is very encouraging, and average just over 41% of all brands on the shelf. National brands, a new category this year, equal just about

half of all honey on the shelf. Store brands, however, continue to increase, if slowly, replacing what is not clear. Most store and many national brands include honey from offshore - 40% of the honey measured did this year, vs. 20% last year.

Though honey containers show some regional preferences, (pints and quarts are typical here, and both are steady, generally local, and remain popular in the SE U.S.), the trend toward smaller, easier to use containers continues. The six ounce plastic and the 12 ounce plastic are good examples of increasing popularity. We suspect that the one pound container remains, at best, steady due to the increase in plastic, squeeze styles,

This month reporters visited local grocery stores to survey honey space. On average, there were:

	#Rows	#Brands	#Local Brands	#National Brands	#Store Brands	# With Foreign Honey
2005	13.6	6.2	2.6	3.1	1.7	2.6
2004	18.4	4.2	1.9	-	1.4	1.8
2003	13	3.0	1.4	-	1.0	0.8
2002	15.6	4.6	2.3	-	1.0	3.5
2001	12.7	4.6	1.7	-	1.5	6.9
2000	13.5	5.2	3.8	-	3.1	5.5

vs. the typical, and glass, queenline jar. The two pound, glass or plastic, continue to decline, and larger sizes remain, but in single digit amounts. Creamed honey on the grocery shelf continues its decline, and comb rally took a dive this year. Meanwhile, specialty and odd size containers continue to increase.

The take home lesson here is demand for smaller, easier to use containers is increasing, grocery store shelf space is declining, specialty markets are increasing, and foreign honey on the retail shelf is too.

	Reporting Regions												Summary		History		
	1	2	3	4	5	6	7	8	9	10	11	12	Range	Avg.	Last Month	Last Yr.	
Extracted honey sold bulk to Packers or Processors																	
Wholesale Bulk																	
55 gal. Light	1.13	1.00	1.13	1.13	1.15	1.13	1.28	1.13	1.13	0.95	1.13	1.13	0.95-1.28	1.12	0.99	1.29	
55 gal. Amber	1.01	0.80	1.01	1.01	0.80	1.20	1.04	1.01	0.65	0.65	1.30	1.01	0.65-1.30	0.96	0.93	1.27	
60# Light (retail)	120.00	118.40	113.32	92.50	113.32	90.00	104.57	90.00	130.00	113.32	130.07	113.32	90.00-130.07	110.73	102.76	108.03	
60# Amber (retail)	110.00	108.30	110.68	90.00	110.68	110.68	98.24	90.00	115.00	110.68	126.00	110.68	90.00-126.00	109.30	94.50	96.98	
Wholesale Case Lots																	
1/2# 24's	39.60	47.95	38.56	40.00	38.56	38.56	41.46	38.56	38.56	35.76	28.00	38.56	28.00-47.95	38.68	47.26	35.28	
1# 24's	62.30	53.88	64.58	58.00	64.58	64.58	62.64	55.00	64.58	63.12	69.60	58.80	45.60-69.60	61.02	62.68	61.00	
2# 12's	64.80	53.72	56.17	54.00	56.17	56.17	52.66	56.17	45.00	57.84	48.00	55.80	45.00-64.80	54.71	56.54	53.99	
12 oz. Plas. 24's	60.00	49.08	54.23	49.00	54.23	54.23	51.64	46.00	62.00	47.28	70.80	45.60	36.00-70.80	52.84	50.34	51.33	
5# 6's	56.20	59.24	64.66	60.00	64.66	64.66	62.41	50.00	64.66	61.86	55.50	64.66	50.00-64.66	60.71	56.40	56.37	
Quarts 12's	84.14	100.35	84.14	75.00	84.14	64.00	83.95	66.00	81.00	84.14	80.13	84.14	64.00-100.35	80.93	81.60	81.86	
Pints 12's	55.92	49.95	55.92	48.00	55.92	40.00	53.67	36.00	45.00	55.92	48.00	55.92	36.00-55.92	50.02	51.26	48.12	
Retail Honey Prices																	
1/2#	2.25	2.52	2.54	2.63	1.79	2.54	2.33	1.79	2.28	2.35	3.01	2.45	1.79-3.01	2.37	2.37	2.48	
12 oz. Plastic	3.13	3.02	3.46	3.15	2.93	3.46	3.29	3.29	3.49	2.76	3.48	2.90	2.76-3.49	3.20	3.25	3.23	
1 lb. Glass	3.44	3.29	4.19	4.00	3.49	4.10	3.68	3.89	3.98	3.63	4.21	3.88	3.29-5.29	3.91	3.91	3.86	
2 lb. Glass	6.75	6.01	5.99	6.06	4.99	7.59	7.55	7.99	5.20	6.62	5.89	6.50	4.99-7.99	6.43	6.36	6.32	
Pint	4.88	6.88	6.56	5.58	6.69	4.47	6.21	5.29	5.38	6.56	5.76	6.56	4.47-6.88	5.90	5.78	5.81	
Quart	8.13	8.55	8.39	8.00	7.50	8.50	8.64	8.99	8.43	8.39	8.73	9.50	7.50-9.50	8.48	9.23	8.75	
5 lb. Glass	11.75	12.70	13.15	13.00	13.15	13.15	12.83	15.99	13.15	13.98	13.05	13.15	11.75-15.99	13.25	13.68	12.89	
1# Cream	5.50	5.37	5.78	4.30	5.78	5.78	5.27	5.79	5.78	5.25	5.15	4.00	4.00-5.79	5.31	4.76	4.43	
1# Comb	5.60	4.54	6.57	5.00	6.57	6.57	6.36	4.99	6.57	4.25	6.00	4.75	4.25-6.57	5.65	5.84	5.65	
Ross Round	3.58	3.90	4.72	5.00	4.72	4.50	6.73	4.72	4.72	4.72	6.33	4.72	3.58-6.73	4.86	4.93	4.49	
Wax (Light)	2.13	2.00	2.59	1.60	2.49	1.93	2.80	2.50	5.00	4.59	2.43	2.25	1.60-5.00	2.21	2.27	1.85	
Wax (Dark)	2.00	1.60	1.94	1.50	2.00	1.75	1.53	2.00	5.00	4.54	1.50	2.15	1.50-5.00	2.01	2.00	1.47	
Poll. Fee/Col.	45.00	43.50	55.26	55.26	55.26	55.26	44.40	55.26	35.00	55.26	70.00	54.38	35.00-70.00	51.98	47.62	38.47	



AIA, AAPA, and ABRC – What Do All Those Letters Mean?

Jointly held meetings of professionals appear to be a thing of the future as organizational budgets, especially for travel, are increasingly being reduced. Thus, two other associations also held their annual meeting in conjunction with that of the American Beekeeping Federation (ABF) in Reno, Nevada.¹ They are represented by three acronyms for associations that have had, and in the future will have, importance in a continuing dialogue with the beekeepers of North America.

The Apiary Inspectors of America (AIA) is the oldest U.S. group to be described here. As its name suggests, it is the official association of state regulators. Its mission is to “promote better beekeeping conditions in North America mainly through more uniform and effective laws and methods for the suppression of bee diseases, and mutual understanding and cooperation between apiary inspection officials, and by the presentation of new information and ideas as developed.” The statement is found on its web site hosted at the Minnesota Department of Agriculture.² Also found there is a comprehensive directory of state apiarists for both the U.S. and Canada. The AIA meets every year to discuss the inspection situation across the nation.

Often scientists are invited to speak at AIA meetings and the Association offers an award of apicultural excellence to someone who has contributed to their mission in either research or education (extension). The meeting sessions are generally open to the public, and the Association rotates its gatherings among beekeeping groups, and both scientific and university laboratories. The AIA will next meet in conjunction with two other groups described below (ABRC and AAPA) at the Baton Rouge, LA, Stock Center and Bee Laboratory.

The American Bee Research Conference (ABRC) is the brainchild of Drs. Joe Moffett (retired from the United States Department of Agriculture) and John Harbo of the Baton Rouge Bee Laboratory.³ Too much cannot be said about the effort that Dr. Harbo has put into this conference over the last decade and a half. Without his vision and hard

“Certainly more needs to be done to bring the AAPA recognition within the beekeeping community similar to that enjoyed by the CAPA.”

work, the ABRC would have remained only an idea whose time might have come. He has truly made it into an institution without which beekeepers and the research community would be a great deal poorer

The idea of the ABRC is to have a common forum where those interested in current research can discuss their work in an informal way. The work is presented as an “abstract,” with a maximum of 540 words accompanied by a graph or table. An oral presentation by the investigator at the meeting then fleshes out the idea behind the work to the audience, and that is followed by a give and take question and answer session. An “abstract” is not technically considered “published,” work and so the author can still publish information at a later time somewhere else.

Not only are scientists allowed to discuss work that is underway without penalty through the ABRC, and in the process exchange valuable ideas, but also the beekeeping community becomes informed about current research efforts on its behalf. The abstracts are published as a composite work each year in the *American Bee Journal*; for which the authors pay a publication charge. This means that beekeepers not attending the actual meeting can still become informed about work in progress. Anyone who wishes can present an abstract by simply sending an idea to the organizers of the Conference in advance of the meet-

ing. Significantly, anyone who has research information can be a presenter. Most, but not all, papers are given by scientists employed at the bee labs or universities.

For many years, professionals who taught beekeeping, regulated the craft and did research in the U.S. have looked somewhat enviously to our northern neighbor. The Canadian Association of Professional Apiculturists (CAPA), which encompasses teaching (extension), research and regulatory (bee inspection) takes a direct leadership role in apicultural events.⁴ It works closely with the Canadian Honey Council (CHC)⁵ which represents producers and packers throughout Canada.

CAPA develops educational material and organizes professional initiatives. It publishes one of the least expensive, comprehensive bulletins on Honey Bee Diseases, now in its third edition, and sold by supply and other publication outlets in the U.S. It was responsible for perhaps one of the best organized Apimondia meetings to date, the one commemorating beekeeping entering the new millennium in Vancouver, British Columbia in 1999. Annually it awards student merit scholarships and jointly administers, the Canadian Bee Research Fund (CBRF), which awards funding to a wide variety of investigators. The CBRF is entirely supported by donations from the apiculture industry and is a unique partnership between CAPA and CHC members.

In 1979, a fledgling effort spear-

Continued on Next Page

headed by ideas from Drs. E.C. (Bert) Martin, Hachiro Shimanuki and Basil Furgala to form an apicultural professional group stalled. However, the idea seemed sound to most in the field. Apicultural researchers and extension folks in the U.S. were largely a fragmented bunch with no forum for promoting communication or unity. Thus, in Orlando, FL in 1983 at a meeting of the AIA, a new association became a reality. It seemed reasonable to name it after the successful Canadian model (CAPA), and so American Association of Professional Apiculturists (AAPA) was adopted. Many in the community still remember this event, hosted by then Florida chief apiarist Jim Herndon. We consummated the formation of the AAPA by downing quantities of the Sunshine state's premier corn on the cob (many know it as the famous Zellwood, FL sweet corn) in January.

Yours truly was the charter president of the AAPA. I edited a paper newsletter for the group from 1983 until 1994, and published a membership directory, which is now maintained on the World Wide Web.⁶ AAPA also took direction from CAPA and each year a member from one group now attends the other group's meeting.

In 1992, celebrating the first decade of AAPA's existence, the Association took a step back to see where it had gone with respect to a vision by Dr. Harry Laidlaw suggesting it should:

1. Brief and "popularize" scientific papers appearing in journals.
2. Do selected scientific paper review on articles having practical application
3. Introduce itself to the industry through journals
4. Members introduce themselves by a brief article in the journals
5. Feature some research or activity that has benefited beekeeping and is doing so today
6. Keep pounding beekeepers with what bee scientists are doing for beekeeping

The AAPA had pursued a number of these goals in the early days of its history, but often fell short for the same reason that it was formed in the first place, fragmented

membership and lack of unity of purpose. Nevertheless, some concrete goals were accomplished. It had managed to meet every year since its inception, something that many in the early years did not think possible. In addition, AAPA had become a forum for idea sharing through regular meetings and an Internet discussion list.

In 1995, the Association underwent a comprehensive review under the leadership of then president, Dr Keith Delaplane, at the University of Georgia, and took another step toward adopting much of Dr Laidlaw's vision by fusing with and regularly sponsoring the American Bee Research Conference (ABRC). The review committee also recommended that the two organizations fuse with the AIA, but this has yet to be accomplished. In addition, the Association began to be more proactive in its outreach to the national beekeeping associations, meeting with both the ABF and American Honey Producers Association (AHPA)⁷ as well as the AIA.

AAPA has also been successful in selling resource materials, including CAPA publications. The Association still has an inventory of its latest work for sale, *Bee Pollinators in Your Garden*, Technical Bulletin Number 2, published in 1999. This slick 18-page booklet is available through the web page and has color pictures of honey bees and most other wild bees from the southeastern blueberry bee (*Habrapoda laboriosa*) to the popular bumble bee (*Bombus sp.*). The audience is the average citizen who might be interested in some aspect of pollination.

As I write this, the AAPA re-

mains a strong association with a substantial treasury and stable membership. Many of its members do serve the beekeeping industry in various capacities suggested by Dr. Laidlaw, though not necessarily under the strict rubric of the AAPA. Certainly more needs to be done to bring the AAPA more recognition within the beekeeping community similar to that enjoyed by the CAPA. Perhaps a missing link is input by the beekeeping associations themselves about how AAPA might further assist them in their endeavors. This article may start a meaningful dialogue with this purpose in mind. **BC**

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Mark Winston

Socio-neural-genomic, Huh What?

"Much of the best research using bees today is extraordinarily technological and complex, focused on basic science more than beekeeping applications."

One of the delightful aspects of growing old is becoming curmudgeonly, as in an *ill-tempered person full of stubborn notions*. The world, of course, isn't what it used to be. Kids today are rude, nobody has any respect any more, what's with that awful music they listen to, and we all know that those you-know-what's in Washington have gone to you-know-where in a hand basket.

And, those young whippersnappers doing bee research today are just a shadow of **my** generation. What do these kids know about honey bees, anyway? They're just a bunch of lab bench jockeys, grinding up bees and sending their body parts through expensive machines, spending endless hours analyzing data on one of those mega-computer things. Why, I'd like to see what they'd do in a bee yard when faced with a real hive

A close look at bee research today can appear a bit like that, at least superficially. My generation was, indeed, more grounded in traditional apiculture. Much of the best research using bees today is extraordinarily technological and complex, focused on basic science more than beekeeping applications.

For a beekeeper, or an old-timey bee scientist, it's easy to dismiss this new wave of big-word science, except: it's fascinating. The immediate benefits for beekeepers may not be apparent, although the long-term potential for this work to address critical problems of pest and disease management is possible but unpredictable.

There are two centers of contemporary honey bee research, both recently established, that provide particularly informative glimpses into the state of bee research today. One is at the University of Illinois, and is not so much brand-new as it is the next step in an already-established program. The second is a consortium of researchers in North Carolina, most of whom recently arrived at four adjacent universities and who share a common interest in honey bee behavior

The Illinois group resulted from the odd collaboration of a highly successful honey bee researcher, Gene Robinson, and Bruce Schatz, a professor of library and information science.

Gene is one of today's superstars in the field of sociogenomics. He emerged from Roger Morse's laboratory with an excellent research and beekeeping pedigree, established his own laboratory in Illinois, and has dedicated his research career to studying how genes (no pun intended) influence behavior. Robinson was the driving force behind the honey bee genome project, which has sequenced every gene in the honey bee, and now is dedicated to "*generating a molecular signature of all the major roles performed by honey bees.*"

Schatz is Mr. Informatics, a high-flyer in the field of analyzing huge and complex data sets. Just to give you a flavor of how he thinks about things: "*We hope to demonstrate the utility of concept navigation across community knowledge. Similar information technology can then serve as a model of the Interspace, the gen-*

eration of the Net beyond the Internet, where all the world's knowledge can be easily analyzed across many sources."

The two together are leading a new initiative called BeeSpace (<http://www.beespace.org/>), with \$5 million of funding for five years provided by the National Science Foundation. The overall objectives are simpler than the technologies involved might suggest, to address "*One of the most important questions in biology: is the origin of particular behaviors nature or nurture?*" The project will use the honey bee to determine which genes influence or determine which behaviors, and then tease out the relative importance of genetic background vs. environment in social behavior.

What might that mean? The Bee Space website provides a flavor of the holistic colony profile that they are attempting: "*Honey bees live in a complex society governed by an age-related division of labor, with each individual assuming many roles during her lifetime. Both genetic heredity and environmental conditions determine what role a bee performs, and when she performs it. The research will generate a unique database of gene expressions for all social behavior, recording brain gene expression for hundreds of individuals, each with a specific societal role integrating molecular description with information from physiology, behavior, neuroscience, and evolution.*"

The North Carolina group also is recent, resulting from new hirings that have brought a number of young and established scientists close together in eastern North Carolina. Five individuals are beginning to define common research interests and apply for grants together, tentatively calling themselves the North Carolina Bee Consortium. They include:

- Susan Fahrbach, Department of Biology, Wake Forest University: Neuroanatomy and physiology of the nervous system, learning changes in the brain (<http://www.wfu.edu/academics/biology/faculty/fahrbach.htm>)
- Christina Grozinger, Department of Entomology, NC State University: Honey bee genomics, physiology, and pheromones (<http://>

Continued on Next Page
19

“Basic research has always preceded applications, but is most accessible to industries like ours when conducted in tandem with applied research.”

www.cals.ncsu.edu:8050/entomology/grozinger/)

- Olav Rueppell, Department of Biology, UNC-Greensboro: Behavioral ontogeny, demography and aging, reproductive tactics, behavioral genetics (http://www.uncg.edu/%7Eo_ruppel/)
- Stan Schneider, Department of Biology, UNC-Charlotte: Behavioral ecology, communication signaling, biology of Africanized honey bees (<http://www.bioweb.uncg.edu/Faculty/Schneider/>)
- David Tarpy, Department of Entomology, NC State University: Behavioral ecology, mating biology, apiculture and applied research (<http://entomology.ncsu.edu/apiculture>)

Of the five, Schneider has been at UNC-Charlotte for many years, and is well-respected in the field of honey bee behavior. The other four are newly arrived. Interestingly, two came from the University of Illinois. Grozinger did a postdoctoral fellowship in Gene Robinson's laboratory following her Ph.D. at Harvard, and exudes talent. Fahrbach was a colleague of Robinson's who was lured away to Wake Forrest, and is, I might add, one of the finest natural teachers I have ever had the pleasure to hear lecture.

Tarpy has an unusual appointment in being responsible for extension work as well as research, and in that way is the strongest potential bridge-builder between basic studies and beekeeping applications. Rueppell's research seamlessly crosses over between bees and ants, and has a wide range from genetics to ecology.

The Consortium is only beginning to define its communal research directions, but from their backgrounds and interests it's clear that they, too, will be using contemporary techniques to address basic questions in this new field of

sociogenomics. Some projects have immediate beekeeping relevance, such as NC State's research investigating the importance of genetic diversity in disease/pest resistance, and their comparison of how *Varroa* mite-resistant stock performs in varied habitats across the state. Other studies are more basic and distant from beekeeping, such as Fahrbach's sophisticated and scientifically cutting edge studies examining how learning changes honey bee brains.

If I was a young and high-end student looking for well-supported, top-tier science, no doubt that I would be applying to Illinois or one of the North Carolina universities. They're asking the biggest questions, and will discover things that overturn conventional wisdom, which is exactly where any ambitious and engaged student would want to be.

But, the potential of today's research generation to contribute towards beekeeping objectives may be lost unless we develop opportunities for bright young apiculturists to participate in these sociogenomic research opportunities. That's where the resources are available

and the sexiest science is being done today.

Basic research has always preceded applications, but is most accessible to industries like ours when conducted in tandem with applied research. If we want the best young whippersnappers to participate in management-focused studies, and to apply some of the exciting new research findings from basic science, we're going to have to find the resources to fund them and provide options for research topics linking big-word science with beekeeping applications.

I'd suggest being positive and proactive rather than curmudgeonly. Our industry might offer to match government contributions towards funding a top graduate student to work at BeeSpace in Illinois, or with the North Carolina consortium. The only requirement: their work should have immediate and applied benefits for bee management.

Ideally, a student in apiculture should have the opportunity to do important basic research that merges seamlessly with beekeeping applications. Forcing a choice between basic and applied work is not helpful, but unless we can generate funding for students to live in the borderland between hot new basic science and important initiatives contributing to bee management, we're going to lose an entire generation of apiculturists. **BC**

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PREMISES LIABILITY

Sylvia A Ezenwa, JD

A beekeeper's premises may be littered with objects that could injure a visitor, such as stray hive boxes, broken honey bottles, flatbed trucks and forklifts used to move beekeeping equipment, and, of course, bees. Therefore, you – as a beekeeper – need to recognize, first, when you may be liable for an injury to a visitor on your premises; second, when an injured visitor may be partially or fully liable for his own injury; and lastly, what precautions can be taken to limit your liability

What is premises liability?

When a defect or dangerous condition on any premises causes an injury to a visitor, the “possessor” of the premises may be liable for the injury. This is premises liability.

When are you the “possessor” of the premises?

The “possessor” of the premises is the person who is occupying or exercising control over the premises when a visitor is injured. So, if you have the right and the power to regulate access to the premises, then *you* possess it. And because the power to regulate access to the premises can be exercised by either an owner or a tenant of the premises, you may be liable for a visitor's injury even if you do not own, but are merely renting or leasing the premises. If you are the tenant, but the defect or dangerous condition on the premises that causes a visitor's injury is controlled by the landlord, and not you, the landlord may also be liable.

What is a defect or dangerous condition?

A *defect* on the premises is a deficiency or imperfection that may cause an injury to a visitor, such as a crack in the sidewalk. A *dangerous condition* on the premises is a condition that creates a substantial risk of injury to a visitor even though the visitor uses the premises with due care and in a way that is reasonably foreseeable to the possessor of the premises. An example of a dangerous condition would be a foreign substance on the floor (e.g., honey, oil, or water), which makes the floor slippery, so that a visitor might slip and fall. The prime example of a dangerous condition characteristic of beekeepers' premises is, of course, bees, which might sting a visitor

Under certain circumstances (see *discussion of duty of care below*), you, as the possessor are required to: (1) eliminate or correct a defect or dangerous condition on the premises; or (2) at least warn visitors of the situation. But, in either case, you are not liable un-

less you have actual or constructive knowledge of the defect or dangerous condition. “Actual knowledge” is when you have express information about the defect or dangerous condition. You have “constructive knowledge” if, with reasonable care, you would have acquired information about it.

Additionally, you may not be liable for not warning visitors of a defect or dangerous condition that is “open and obvious.” An “open and obvious” defect or dangerous condition is one which a visitor is expected, with ordinary or reasonable care, to recognize and avoid, since it is presumed to provide its own warning, making it unnecessary for you to do so.

What can an injured visitor argue in a lawsuit?

A visitor who is injured by a defect or dangerous condition on your premises may file a premises liability lawsuit against you, as the possessor of the premises, to recover monetary damages that will compensate him for the injury. Both you and your beekeeping business (if your business is a separate entity, such as a corporation), can be named as defendants in the lawsuit.

In a premises liability lawsuit, an injured visitor can argue that his injury was caused by your negligence. But to win a negligence-based lawsuit, the visitor must prove that: (1) you owed him a duty of care; (2) you breached or did not perform the duty; (3) he suffered an injury; and (4) your breach or nonperformance of the duty was the proximate cause of his injury.

Duty of care?

The degree or duty of care you owe a visitor depends on how the visitor is classified. In most states, visitors are classified as either (1) trespassers; (2) licensees; (3) social guests; or (4) invitees.

(1) Trespassers

A visitor who enters your premises without any right, legal authority, or express or implied consent from you, and who is on the premises only for his own benefit and not yours, is classified as a trespasser. And there are two types of trespassers: adults and children.

You owe the lowest duty of care to an adult trespasser whom you do not know is on your premises. Your only duty to an unknown adult trespasser is to not cause injury by willful and wanton misconduct.

Your duty is higher if you know an adult trespasser is on your premises. Then your duty is to: (i) eliminate or correct a defect or dangerous condition which is not open and obvious, and which you have knowledge of; or (ii) warn the trespasser of the defect or dangerous condition.

Your duty to a child trespasser is governed, in most states, by what is known as the *attractive nuisance doctrine*, where there is an artificial or man-made condition on your premises which may be a danger and at-



tract children to your premises (i.e., an "attractive nuisance"), you have a duty to take reasonable precautions to prevent injuries to children whom you know trespass there.

However, the attractive nuisance doctrine does not apply, and you are not liable, unless *all* of the following can be proved: (i) you had actual or constructive knowledge that the child was likely to trespass in the vicinity of the condition; (ii) the condition posed an unreasonable risk of death or serious bodily injury to the child; (iii) the child was so young that he did not discover the condition or comprehend the danger that it posed; (iv) the usefulness of the condition to you and the burden on you of eliminating or correcting the condition were both outweighed by the danger that the condition posed to the child; and (v) you did not take reasonable precautions to eliminate or correct the condition, or any other measures to protect the child from injury.

Some examples of artificial and dangerous conditions on beekeepers' premises that may be attractive nuisances, and for which you may be liable under the attractive nuisance doctrine include:

- Large or heavy pieces of equipment (e.g., hive boxes, bottom boards, and covers, and honey extractors and tanks), which might fall on a child.
- Any equipment, machinery, or tools with sharp edges, which might cut a child.
- Insecticides, miticides, organic acids and other chemicals, which a child might swallow and be poisoned.
- An artificial water source, in which a child might wade and drown.
- A hive of live bees, which a child might vandalize, tip over, or otherwise disturb, and be stung.

Courts do not generally consider common domestic farm animals and pets to be attractive nuisances. But the more dangerous or unusual an animal actually is – or perhaps, is perceived to be – the greater the responsibility of the owner of the animal to protect a trespassing child. And because the keeping of bees is an activity that not many people understand, most courts will likely view bees as unusual enough to be an attractive nuisance.

(2) Licensees

A visitor who has a right to enter your premises because of your express or implied consent, but who is on the premises for his own benefit and not yours, is classified as a licensee.

The duty of care you owe to a licensee is the same as the duty you owe to a known adult trespasser. Therefore, your duty to a licensee is to: (i) eliminate or correct a defect or dangerous condition on your premises which is not open and obvious, and which you have actual knowledge of; or (ii) warn the licensee of the defect or dangerous condition.

An example of a licensee is a neighbor who obtains your consent to enter your premises to borrow tools from a toolshed whenever he needs them.

Because a key characteristic of a licensee is the fact that a licensee enters the premises – albeit with the consent of the possessor of the premises – for his own benefit and not that of the possessor, a tenant who is leasing or renting the premises is not a licensee, because the tenant is compensating the landlord or owner of the premises for his occupancy; and therefore, the tenant's occupancy of the premises is of benefit to both. And, as mentioned earlier, when a visitor is injured on the leased premises, whether the tenant or the landlord is liable depends on which of the two had control over, or the power to regulate access to, the defect or dangerous condition when the visitor was injured.

(3) Social Guests

A visitor who enters your premises so as to enjoy your companionship or hospitality is classified as a social guest. To be classified as a social guest, a visitor does not have to be invited onto your premises, provided that he is someone that you know (e.g., neighbor, friend, or acquaintance), and your prior relationship with the visitor is such that you would not consider an unexpected visit by him to be untoward or unwelcome.

The duty of care you owe to a social guest is the same as the duty you owe to a licensee. Therefore, your duty to a social guest is to: (i) eliminate or correct any defect or (ii) warn the guest of the defect or dangerous condition.

Examples of social guests include: a neighbor who is invited to your premises to attend a Thanksgiving dinner; or a friend who drops by and enters the honey house, to chat for a bit.

(4) Invitees

A visitor is classified as an invitee if he enters your premises with an express or implied invitation from you, for a purpose that is connected with your beekeeping business, and is on the premises for his own benefit or for the mutual benefit of both of you.

You owe the highest duty of care to an invitee, for whom you must keep the premises in a reasonably safe condition. Specifically, your duty to an invitee is to: (i) discover, and fix, a defect or dangerous condition which is not open and obvious, and which you have actual or constructive knowledge of; or (ii) warn the invitee of the situation.

Your duty to an invitee differs from that due trespassers, licensees, and social guests in that, with respect to an invitee, you do not need actual knowledge of a defect or dangerous condition; constructive knowledge is enough. This means that you may be liable even when you do not know of a defect or dangerous condition, but with the use of reasonable care, you would have.

Also, in the case of an invitee, you may be liable regardless of the fact that a defect or dangerous condition is open and obvious. This could happen when the defect or dangerous condition is extreme, or continues to be unreasonably dangerous, even though it is open and obvious.



Invitees include a customer on your premises to buy honey, a grower negotiating a pollination contract, or a vendor who is delivering equipment that you ordered.

You should also note that a beekeeping operation does not need to be legally designated as a "business" by any local, state, or federal law or agency in order for a visitor to be classified as an invitee. This is because your heightened duty of care to an invitee may be triggered so long as you are benefiting or profiting in some way from the invitee's presence on your premises. So, for example, a visitor who enters the premises of a hobbyist beekeeper to buy a single bottle of honey may be classified as an invitee even though the hobbyist beekeeper does not run a commercial enterprise or a home-based business under the local zoning laws, and only occasionally sells honey.

Some states, including Hawaii, North Carolina, and Minnesota, have abolished the different visitor classifications. Instead, these states have a single duty of care for all visitors who are lawfully on the premises, which is essentially identical to the duty owed by the possessor of the premises to invitees.

What are your defenses to premises liability?

If you're confronted with charges of negligence in a premises liability lawsuit, there are several defenses that you may argue to lessen, or completely negate, your liability. Two common defenses are: (1) contributory negligence; and (2) assumption of risk.

(1) Contributory Negligence

Contributory negligence on the part of a visitor to your premises occurs when the visitor does not exercise reasonable care for his own protection or safety; and this failure, along with your negligence, is a contributing cause of the visitor's injury.

If a visitor's conduct is a contributing cause of his injury, the judge or jury will determine the amount of culpability of both you and the visitor, and, based on that determination, will apportion liability accordingly.



For example, if a neighbor trips on a stray super in your apiary and breaks his arm, the judge or jury could determine that you are 30 percent liable because you kept a super lying on the ground, and the visitor is 70 percent liable because he ignored your verbal instructions not to enter the apiary.

And based on that determination, you will be ordered to pay 30 percent of the visitor's medical expenses, while the visitor will have to pay the remaining 70 percent himself.

(2) Assumption of Risk

Under assumption of risk, a visitor cannot recover damages for an injury from a dangerous condition that: (i) he has knowledge of; (ii) knows is dangerous; (iii) is conscious of the nature or extent of; and (iv) voluntarily subjects himself to.

When can you argue those defenses?

As the defendant in a premises liability lawsuit, it is your prerogative to choose when to argue contributory negligence or assumption of risk as a defense to an injured visitor's allegations. The following examples will give you an idea of when you can argue each defense, and when it may be successful.

(1) Contributory Negligence

A female television reporter is on your premises to interview you for the evening news. Before the interview begins, you give the reporter and each member of her crew a veil, coveralls, and elbow-length gloves; and you warn them not to remove the clothing while in the apiary in order to protect against stings. During the interview, at a moment when you turn away from the reporter and are bent over a hive, the reporter removes her veil, and gloves in order to review her notes.

While doing so, she stumbles on one of the supers lying on the ground, and bumps into another hive. The bees are agitated, and she is stung multiple times.

In a premises liability lawsuit filed against you by the reporter, you may be found negligent for leaving the super lying on the ground, but the reporter could also be found to have contributed to her injury by ignoring your verbal warning not to remove her protective clothing while in the apiary.

(2) Assumption of Risk

An entomology teacher from a local community college is on your premises to photograph your colonies for a class presentation. Before the photo shoot begins, you warn the teacher about the conditions for robbing that are high right now, and the bees are extremely protective. So you urge him to delay the activity for several days. But he insists on going ahead that same day, as planned. You guessed it. While photographing the colonies he is stung multiple times.

In a premises liability lawsuit filed against you by the entomology teacher, he could be found to have assumed the risk of being stung by the defensive bees since he voluntarily chose to photograph the colonies despite your warning. Also, because he is an entomologist, the judge or jury might presume that, even without the warning, he already had some knowledge of the negative effect of robbing on the temperament of bees.

What precautions can you take to limit your liability?

Litigation is very subjective; it depends in large part on the way that the judge or jury chooses to view the facts of a particular case. Therefore, it is difficult to prescribe any surefire methods of avoiding premises liability. But, you, as the possessor of the premises, can take certain precautions to limit your liability. Specifically:

(i) You should discover defects or dangerous conditions by conducting inspections of your premises on a regular basis; *and keep maintenance records of all dates of inspections, and of any defects or dangerous conditions you discover* You should inspect buildings, such as honey houses, garages, and toolsheds, for structural

defects; and equipment, tools, and vehicles for mechanical defects.

(ii) You should be wary of when the bees pose an increased threat to visitors by monitoring the colonies on your premises on a regular basis for signs of defensive behavior; and keep detailed records. When the bees were worked, what was done and who did it. Notes on weather, problems in the hive such as disease or pests and other, both normal and unexpected situations should be taken and dated.

(iii) Eliminate or correct defects or dangerous conditions by hiring a reputable company or individual to perform the repairs; and keep all work invoices as evidence of the dates of repairs, and of the specific repairs made. You should have structural defects in buildings and mechanical defects in equipment, tools, and vehicles repaired as soon as they are discovered.

(iv) Take precautions to prevent dangerous or aggressive behavior by the colonies (e.g., requeen an aggressive colony that may bother neighbors or visitors); and keep detailed records of all colony management and good neighbor practices, including any measures you take to prevent robbing and even swarming by the bees.

(v) Warn of defects or dangerous conditions by posting signs or instructions; and keep copies of all written warnings, along with the dates when, and the locations where, the warnings are posted. You should post permanent signs (e.g., "Bees on Property") for conditions that pose a continuing danger. And although temporary signs (e.g., "Wet Floor") are okay for conditions that pose only a transient or passing threat, you should post any temporary sign as soon as possible after the danger arises.

(vi) Restrict access to dangerous conditions, particularly for child trespassers who cannot read or understand written warnings (e.g., close garages and lock storage cabinets containing equipment, tools, and insecticides or other chemicals); and keep records of any measures you take to restrict access to dangerous conditions, including the dates when the measures are instituted.

(vii) Install an artificial (e.g., fence or building) or a natural (e.g., dense shrubs or hedges) barrier near the colonies to restrict access to the colonies and shield them from the view of visitors.

(viii) Insure your premises by purchasing an insurance policy with coverage for injuries suffered by visitors caused by defects or dangerous conditions; and review your policy periodically, making sure to increase the scope and amount of coverage when necessary. If you are a commercial beekeeper you probably need to purchase a commercial general liability (CGL) policy. If you are a hobbyist beekeeper, you can tailor the liability limits of your standard homeowners insurance policy to provide you with adequate liability coverage. If you are a sideliner or a small to mid-sized commercial beekeeper who runs a beekeeping business from your home, you have several options to choose from:

- A standard homeowners insurance policy with liability limits tailored to your needs.
- A standard homeowners insurance policy with a

liability endorsement that provides extra liability coverage.

- An in-home business policy, which provides broader liability coverage than a standard homeowners insurance policy with a liability endorsement.
- A business owners policy (BOP), which provides broader liability coverage than an in-home business policy.

(ix) If you are leasing the premises, beware of any indemnity clause in your commercial lease requiring you to indemnify or *reimburse the landlord* for any money (e.g., damage awards, judgments, or litigation costs, including attorney's fees and expert or consultant fees) which the landlord spends to defend itself against a premises liability lawsuit. You should negotiate with the landlord to either eliminate an indemnity clause or restrict its scope.

(x) Guard against insurance fraud and frivolous lawsuits by keeping detailed accident reports of any injuries that are purportedly suffered on your premises. Accident reports should include:

- The name of the injured visitor and why he was on your premises.
- The type and severity of the injury, and how the injury occurred.
- The date and time of the injury, and the location of the accident.
- The signed and sworn (i.e., notarized) affidavits or statements of any witnesses to the accident, and their addresses and phone numbers.
- A description or photograph of both the location of the accident and the defect or dangerous condition.
- If available, surveillance video of the accident itself.

And remember, the more thorough the accident report, the less likely an injured visitor will be to succeed in *abusing* the legal system by exaggerating or fabricating his injury.

Conclusion

The prospect of facing a premises liability lawsuit can be frightening. And for beekeepers, those fears will likely include the deleterious economic impact of such a suit on their beekeeping operations, along with the erosion of goodwill amongst customers, business associates, friends, and neighbors that mere word of such a suit may engender. Hopefully, though, a better understanding of premises liability will allay such fears, and encourage beekeepers to be proactive and take precautions to limit their liability. **BC**

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DISCLAIMER: The information in this article is not intended to constitute legal advice. Please consult an attorney regarding your specific situation.



DOUBLE DOUBLE GRAFTING GRAFTING

Sue Cobey

Is 'more is better' right, or are looks deceiving?

The honey bee queen will develop 50 different morphological characteristics necessary to support her role as egg layer and mother of a populous colony. The quality of care and rearing conditions provided during larval development will affect her future performance as queen. These factors include; body weight, the number of ovarioles, and the size and volume of the spermatheca.

A fertilized honey bee egg has the potential to become either a queen or worker bee. Nutrition is the decisive factor in caste determination. It is well recognized that the age of larvae chosen to become a queen is important. Queens have an accelerated development time of 16 days as compared to 21 days for workers, and 24 days for drones. The larvae feeding phase is critical to development.

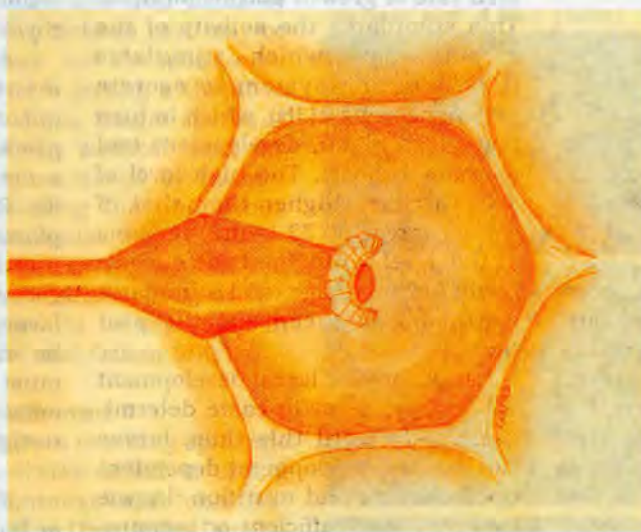
Nurse bees provide the quality and quantity of food necessary for queen development in a short period of time, 4.5 days. For this reason, early recognition of a larva as a developing queen will affect the diet and quality of nutrition given. For grafting, it is well recognized that larvae should be transferred from worker brood cells into queen cell cups within 24 hours of egg hatch.

The controversial practice of double grafting is intended to supply queen larvae with surplus food. The first graft of larvae is removed after the cells have been well provi-

sioned for 2 or 3 days. A second graft of young larvae is placed in these cell cups. As a lure for superior quality, occasionally you see advertisements for "Double Grafted Queens"

The cliché "More is Better" applies, or does it? Double grafted queen cells tend to be larger. These

larvae is different from that fed at a later stage. The young, second graft of larvae does not receive an age appropriate diet and therefore lacks the stimulus for a rapid rate of growth. Quantity is important, but so is the quality of the diet, maybe more so.



Grafting: the proper age larvae, 18 to 24 hours after egg hatch, to transfer into queen cell cups. (drawing by Juan Castro)

are built to accommodate the extra food reserves. Yet, "Looks Can Be Deceiving". The queens emerging from these cells are often scrawny and inferior. There is a need to understand the nutritional requirements of developing queen larvae in more detail.

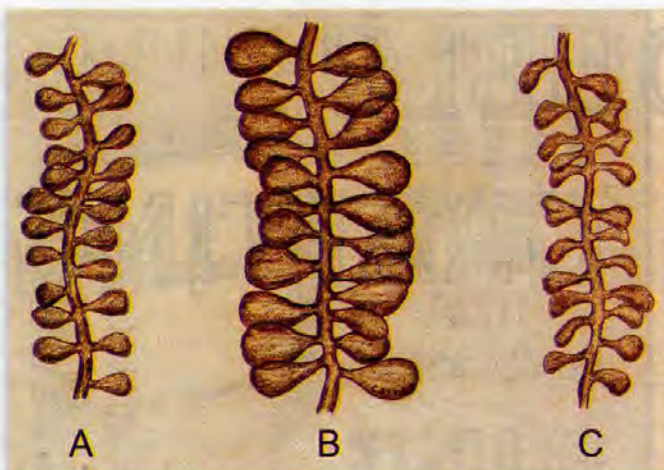
The queen larval diet is very specialized and changes with age and development. The composition of royal jelly, initially fed to young

Royal jelly, RJ, is a complex substance produced from two different types of glands; the hypopharyngeal glands and the mandibular glands. During the first two weeks of life these specialized brood food glands are well developed in nurse bees. Glandular development is dependent upon physiological condition, age of the bee and a high protein diet. To properly provision queen cells with RJ, an adequate number of nurse bees in the proper physiological state are required.

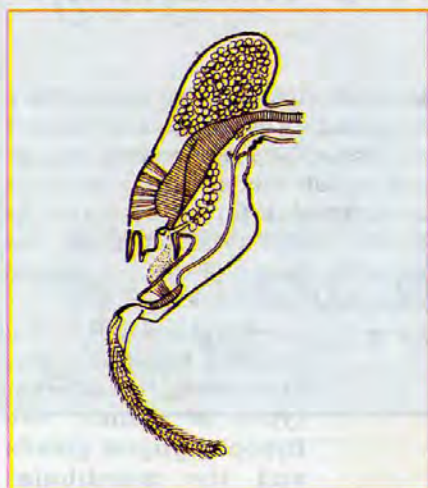
The paired hypopharyngeal glands are in the front part of head. These are looping chains of oval glandular lobes, numbering over 550 on each side. These glands secrete the clear component of brood food; rich in enzymes, lipids vitamins and proteins. Undeveloped in newly emerged bees, these glands are fully functional in nurse bees five to 15 days old, then degenerate as bees begin foraging.

The mandibular glands are a pair of pouches in front of the man-

Continued on Next Page



The hypopharyngeal glands at different stages in the life of a worker bee. A) Undeveloped glands in newly emerged bees. B) Fully functional glands in nurse bees, five to 15 days old. C) Degenerated glands of foragers. (drawing by Juan Castro)



Side view of the nurse bee head showing the looping chains of the oval, lobed hypopharyngeal glands, numbering over 550 on each side.

dibles that produce the white component of RJ, consisting of the fatty acid 10-hydroxy-2 trans-decenoic acid, pantothenic acid bipterin. These glands are well developed in newly emerged bees and also atrophy at about two weeks of age, as bees move into other tasks.

RJ fed to queen larvae varies in composition with the age of larvae being fed. During the first three days, the diet is mostly the white mandibular gland component. During the fourth and fifth day of queen larval feeding, the RJ diet contains more of the clear hypopharyngeal gland component, rich in protein.

The RJ fed during early development is high in sugar, 34% as compared to the 12% sugar of worker jelly. The jellies also differ in the type of sugars they contain. RJ is high in glucose and worker jelly contains more fructose. The initial high sugar RJ diet acts as a

phagostimulant (feeding stimulant) and induces voracious consumption. Nurse bees provide 1,600 feeding visits to a queen larva, the equivalent of 17 hours. In comparison, a worker larva, which has a longer development time, receives only about 140 feeding visits during the larval stage.

The high rate of consumption of queen larvae results in an accelerated rate of growth and respiration. This stimulates the activity of the corpora allata, which stimulates the endocrine system to secrete juvenile hormone (JH), which in turn regulates growth, development and metamorphosis. The high level of JH, 10 times higher than that of worker larvae at 72 hours, remains at this level throughout the queen's larval feeding stage, and stimulates synthesis of queen specific proteins.

Day three of larval development is a critical point in caste determination. Up until this time, larvae can change development dependent upon cell size and nutrition. Larvae that receive insufficient or inappropriate diets develop into intercastes; having both queen-like

and worker-like characteristics. For this reason, larvae transferred into queen cell cups 36 hours or more after egg hatch, or double grafted into cell cups supplied with RJ of an older developmental stage, produce queens of inferior quality.

Considering these factors, the practice of double grafting can only offer an advantage during a brief period of time. Larvae must be transferred into queen cells that have been grafted 10 to 14 hours earlier. After 24 hours the royal jelly supplied is too old. Timing earlier than this can be problematic, as at five hours into the graft, there is too little RJ to make a difference. The advantage gained in the practice of double grafting is of questionable value, and requires extra labor.

A more effective strategy in the rearing of high quality queens is to optimize conditions that enhance queen rearing. Provide strong, healthy colonies with a high population ratio of well-fed, young nurse bees. Nurse bees will routinely provision queen cells with a surplus of royal jelly of the proper diet.

A focus on two basic requirements for rearing high quality queens; good stock sources and the proper rearing environment, will be a more effective assurance of quality. Both of these aspects must be planned in advance. Selection of breeding stock takes time and diligence. To enhance conditions that favor queen rearing, colonies must be strong and healthy. Colonies must also be free of miticide treatments and residues, known to negatively affect reproductives. **BC**

Sue Cobey is a research technician at The Ohio State University Honey Bee Lab, and owner of the New World Carniolan Queen project.

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SOYBEAN RUST

Should beekeepers be concerned?

Audrey B Sheridan
Carence Collison



A new disease in North America

Asian soybean rust is a fungal disease of leguminous plants that was introduced into the southeastern United States late last year, presumably during the hurricane season (USDA 2004). It is fast-acting and highly contagious, and has plagued agriculture in such countries as Thailand, Taiwan, Japan, and India for years; recently it has spread to Argentina and Brazil (Dorrance, et al. 2005). The damage caused by this disease is defoliation, which can reduce crop yields by up to 80 percent (Stokstad 2004). Soybean rust may be caused by several species of fungi, but the most tenacious, *Phakopsora pachyrizi*, is now posing a threat to U.S. crops. The dispersal rate of the fungal spores is especially high in windy and rainy weather, and the survivability of the pathogen is increased by numerous overwintering hosts, including the ubiquitous southern weed, kudzu. No commercial variety of soybean has shown resistance to the pathogen as of yet, and scientists believe that it may take as long as five years for pathogen-resistant genes to be expressed in modern cultivars (Stokstad 2004 and Ozkan 2005).

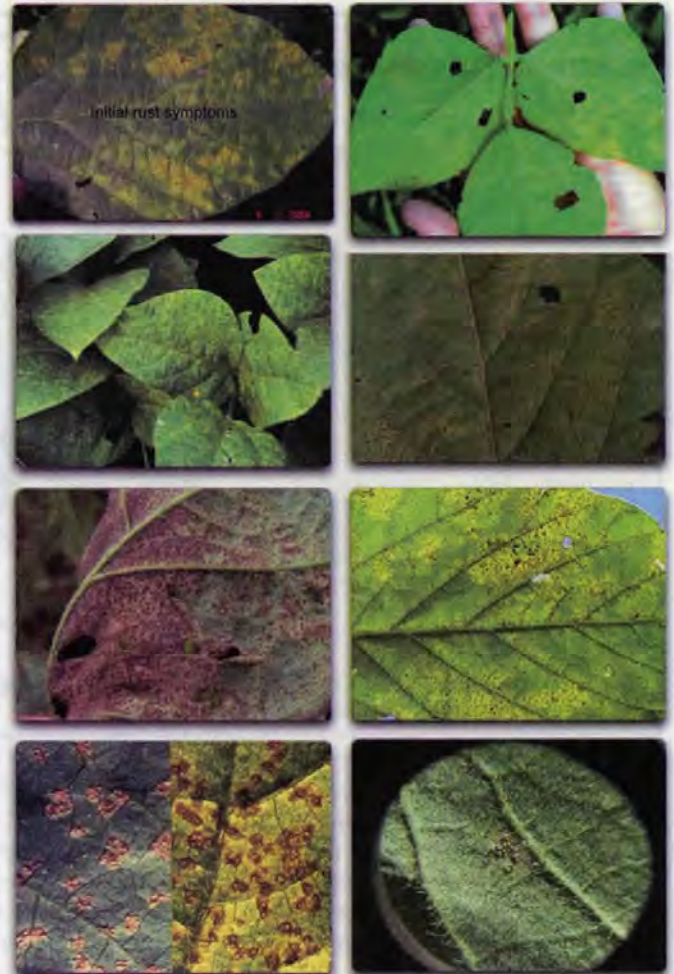
How honey bees could be affected

To keep Asian soybean rust from reaching epidemic proportions in North America, USDA-APHIS is urging soybean growers to follow "preventative" and "curative" fungicide application programs. The Ohio State Department of Plant Pathology proposes that spraying begin at the R1 (early flowering) stage and end at the R6 (seed set) stage to achieve maximum protection. Spraying guidelines call for *thorough* coverage of the plant (Ozkan 2005), which means honey bees will probably come into contact with the fungicides while working the crop.

There are currently five fungicide products that are registered for use on Asian soybean rust*, and seven more products which have received Section 18 exemption labels for most states**. The majority of these fun-

gicides are systemic, meaning they penetrate the waxy cuticle of the leaf and travel throughout plant tissues, preventing or inhibiting fungal sporulation. Others are contact poisons, which remain on the outer surface of the plant and inhibit metabolic processes of the fungi (Butzen et al. 2005). Due to the target-specific nature of the active ingredients, none of these products have proven toxicity to honey bees or other beneficial insects in accordance with LD₅₀¹ or LC₅₀² standards.

Soybean rust. (USDA photo)



¹ LD₅₀ is the measured solid- or liquid-state dose of pesticide that will kill 50% of a test population, in this case, honey bees.

² LC₅₀ is the concentration of pesticide in the air (vapor or dust) that will kill 50% of a test population.

Actually, most fungicides aren't toxic to honey bees in the quantities ingested or contacted during foraging, but in some cases they have been shown to deter feeding and cause hypothermia in adult bees (Mussen et al. 2004), and even cause developmental defects in larvae (Vandame and Belzunces 1998). Such consequences are termed "sublethal," and are generally ignored in fast-tracked pesticide registration because they are not directly linked to mortality. For years, research has shown a correlation between sublethal effects of pesticides on honey bees and a decline in colony size and health, but a testing procedure for these effects has not yet been integrated in the standard protocol. Fortunately, there is a growing interest in the preservation of feral and managed honey bees, which encourages more extensive research on factors influencing honey bee behavior, including sublethal pesticide poisoning.

Why bother with soybeans?

There is no evidence that honey bees significantly increase soybean production by aiding pollination (Danka and Villa 2004), but commercial beekeepers profit from setting hives near monoculture soybean fields. In Tennessee, for example, it is reported that large quantities of surplus honey crops have been produced by bees working soybean fields (Hivetool.com 2003). As a marketable commodity, soybean honey ranks high among the nectar crops. Soybean honey is

It would be in the best interest of both growers and beekeepers to keep Asian soybean rust from becoming an epidemic in the U.S., and with careful research and appropriate control techniques, this can be accomplished without risk to honey bees. **BC**

* Quadris®, Bravo®, Echo 720®, Headline® 2.09EC, and Chloronil®

** Tilt® 3.6EC, PropiMax™ 3.6EC, Bumper® 41.8EC, Folicur® 3.6F, Laredo™ 25EC, Laredo™ 25EW, and Stratego®

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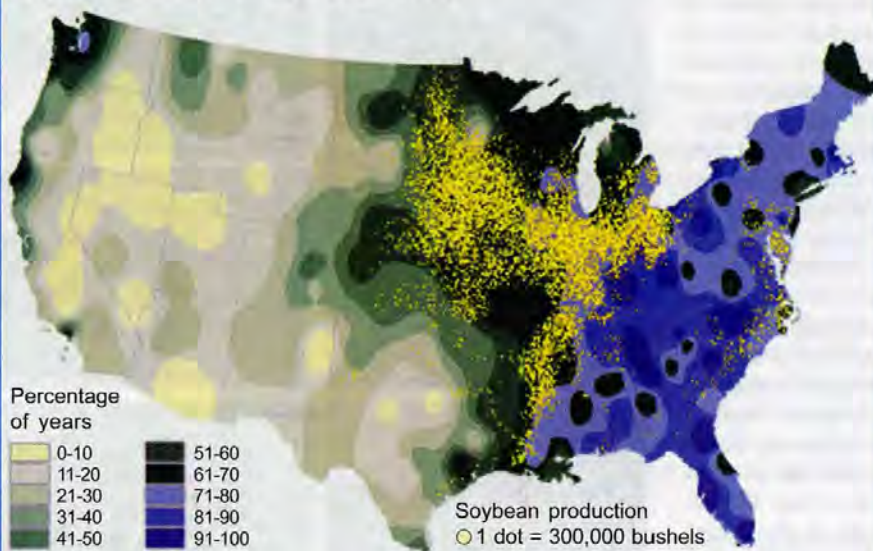
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Percentage of years out of 30 that climatic conditions are expected to support establishment of soybean rust



Source: USDA's Animal and Plant Health Inspection Service and National Agricultural Statistics Service.

desirable in both taste and nutritive properties, and its high antioxidant content makes it an ideal preservative for use in the food industry (Engeseth 1999). To the hobbyist beekeeper, soybean is a readily available and abundant source of nectar and pollen for their bees, providing forage from Spring to Fall in warmer climates.

Honey Plants

Conn e Krochmal



Bradford Pear

Ornamental Fruits

Spring is all about excess. Mother Nature works her magic with great abandon. Of all the Spring flowering trees, the ornamental fruits are the most popular. We'll save the crab apples for next month, and look at the others now. Eagerly sought by bees, these are fine nectar and pollen plants. Except for the Yoshino cherry, honey descriptions are usually unavailable.

Generally, ornamental fruits have alternate, simple leaves. Their blooms occur mostly in clusters. Though some may in fact produce fruits, these are generally inconspicuous and inedible.

With few exceptions, these bee plants need a sunny, well-drained spot. To varying degrees, they're prone to the usual diseases and insects that attack fruit trees.

Flowering cherry



CHERRIES

Cherries are noted for their colorful reddish-brown bark with prominent horizontal lenticels. Their flowers are popular with the bees.

Higan cherry, Spring cherry (*Prunus subhirtella*)

Known for its flower power, Higan cherry will dazzle in zones five through nine. This densely branching tree assumes a rounded shape. It reaches 25 to 40 feet with a spread of 15 feet or more. It has graced American gardens since 1846.

Up to four inches in length, the foliage arises from hairy leafstalks. Usually, Higan cherry brings vivid orange to red Fall color.

An abundance of loose, airy blossoms open very early in rounded bunches of five or so. Pale to deep pink, they're 1½ inches wide.

Few insects or diseases are associated with Higan cherry.

Japanese flowering cherry, Oriental cherry (*Prunus serrulata*)

Under typical landscape conditions, this charming, vase-shaped tree grows to 20 feet or so in height. Hardy in zones five through eight, the Japanese flowering cherry tends to be rather short-lived. As they unfurl, the young leaves are bronze to brownish-red. Fall color brings on a rich red.

Proudly displayed before or with the foliage, the wonderfully scented, pink or white blooms adorn the tree. These can be 2½ inches in diameter. They open in clusters of five or more. The double-flowering cultivars are less suitable for bees. Of the ones with single blooms, the following are outstanding.

Jo-nioi is much loved for its richly fragrant blooms. Up to 1½ inches wide, their white petals contrast with the purple-brown sepals. The new leaves are pale yellow.

Taki-nioi, only 12 to 15 feet in height, has shapely, spreading branches. Its young foliage is reddish-bronze. Blooming freely, this vigorous tree features dense clusters of aromatic white blossoms, 1¼ inches across.

Washin-o' tends to have an upright, spreading shape. Lending a perfume-like fragrance, the 1½-inch-wide blooms make their appearance very early in the season.

Sargent cherry (*Prunus sargentii*)

Sargent cherry is preferred when there is available space. An imposing beauty, it towers to around 50 feet. This dense, rounded species grows best in zones five through nine. Reddish or purplish as they emerge, the leaves reach five inches in length. These put on a colorful Fall show.

With reddish-brown stems, Sargent cherry becomes a sensation in pink when the masses of flowers open before the leaves. They're one-half

inch wide. These occur in umbels with six or more blossoms.

Grown in America since 1890, this tree experiences hardly any insect or disease problems. It tends to be short-lived. Several cultivars are available, including a columnar form for small, narrow spaces.

Yoshino cherry, Potomac cherry (*Prunus x yedoensis*)

For the Spring, let's set our political differences aside and bask in the beauty of the cherry blossoms in our nation's capital. Nine hundred Yoshino cherries were planted in Washington, D.C. as a gift from Tokyo in 1912. This is recommended for zones five through nine.

A bushy round or flat-topped tree, Yoshino cherry is normally 20 to 25 feet tall with an equal width. It outshines the other ornamental cherries.

Eagerly flowering early in the season, the lightly scented blooms open pink and fade to white. These usually appear before the leaves. They're in attractive bunches with five or so blooms. Bees love the extra floral nectaries on the leaf stalks.

Honey from the Yoshino cherry is yellow or golden, and granulates rapidly.

CHERRY LAURELS

Unlike the other ornamental fruits, cherry laurels are evergreen. As trees and shrubs, they grow best in zones seven and above. These species may survive in zone six, but can suffer damage from snow and ice. Only ¼ inch wide, their tiny blooms provide a delightful fragrance.

Carolina cherry laurel (*Prunus caroliniana*)

Very popular among the bees, this native plant also goes by the name laurel cherry. Carolina cherry laurel is especially good for building up colonies and brood-rearing. Its range extends from the Carolinas and Florida to Texas.

This bushy-headed, fast-growing plant assumes a pyramidal shape. Reaching about 20 to 30 feet in height, it can have an equal spread. Compact cultivars are available. When young, the alternate, evergreen leaves look bronze or yellow-green.

Carolina cherry laurel produces cream-colored to white blooms as early as February. They open in short racemes in the leaf axils.

This is easy to grow. Tolerating salt spray, Carolina cherry laurel thrives in full sun and partial shade. It abhors wet soils.

Cherry laurel, English laurel (*Prunus laurocerasus*)

A vigorous, rounded evergreen, cherry laurel is only ten to 18 feet tall but 30 feet across. Its shiny, toothed, leathery leaves are tapered. Generously sized, they can be six inches in length and half as wide.

Cherry laurel features white flowers, appearing in five-inch-long bunches terminally and from the leaf axils.

Despite its name, this plant was originally native to Europe and Asia.



Flowering
Cherry

FLOWERING PEARS

Stand on a street corner in America, and chances are you'll see a Bradford pear. The meteoric rise of this celebrity tree overshadows the many other fine ornamental pears. All of these are well-liked by bees.

Some ornamental pears suffer from fire blight, though this is less of a problem with the Callery pear and its cultivars, such as Bradford.

Callery pear and its cultivars (*Prunus calleryana*)

Before improved cultivars came along, Callery pear was commonly grown following its introduction to the U.S. nearly a century ago. This is a medium-sized, dense, symmetrical tree. It grows to about 30 feet tall. While the Callery tends to be thorny, its cultivars aren't. During the Fall, the glossy, leathery leaves become bright orange-red to red. They persist on the tree until Winter

This tree and its cultivars have clouds of white flowers, an inch in diameter. Sometimes damaged by late frosts, these appear in clusters before the leaves unfold.

Callery pear and its relatives thrive in zones five through nine. They're well-adapted to a wide range of soil types and pH levels. Relatively free of problems, these seem immune to fire blight. Pollution doesn't affect them either.

Numerous cultivars are available. When choosing one, be mindful of the following characteristics. These include shape, size, cold tolerance, and tendency to split. The latter is a serious problem when the Bradford becomes older, which isn't so for the others. For the most part, Bradford has the least cold tolerance of the group.

Aristocrat pear tends to maintain a central leader. Quick growing and vigorous, this has a more open crown than Bradford. The foliage has crinkled edges. It provides showy fall color ranging from yellow to deep red. Though this tree may not be as freely flowering as the Callery, it still puts on quite a show. Aristocrat tolerates extreme heat.

Autumn Blaze pear was introduced over 25 years ago. Rounded to broadly conical, this blooms in great profusion. It gives consistent, reddish-purple Fall color

Due to its narrow, columnar shape, Capital pear is recommended whenever compact trees are needed. Its leaves become copper or reddish-purple during the Autumn.

Chanticleer pear has a more compact crown than Bradford. It is suitable for small, narrow spaces. Masses of white flowers conceal the branches. Touted for its purplish-red Fall display, the foliage withstands early freezes.

Korean Callery pear is a stately, pyramidal tree with a round head. It only reaches about 15 feet in height with a spread of 20 feet. Providing early red or yellow Fall color, this tends to shed its leaves earlier than Bradford.

Redspire pear is a fast-growing, narrowly upright tree to 40 feet in height. Its leathery foliage offers red or purple Fall color.

Whitehouse pear has a narrow, columnar growth habit. Less vigorous than Bradford, this is praiseworthy for its radiant, pure white flowers and either red or purple Fall foliage.

Bradford pear is noted for its perfectly symmetrical shape. Reaching 30 to 50 feet in height with a width of 20 to 35 feet, this tree holds its leaves late into the Fall. In the South and less so in the North, the spectacular Fall foliage may be orange, red, or purple.

Blooming freely, the stems of Bradford pear are surrounded by small, white flowers. These open in three-inch-wide, rounded bunches before or with the leaves.

Other Flowering Pears

In the world of flowering trees, there are several other species of ornamental pears that are eagerly worked by bees.

For cold climates, beekeepers can't do better than the Chinese or Ussuri pear (*Pyrus ussuriensis*). It is suited to zones three through six. Though it could conceivably grow to 50 feet, it tends to be much smaller. Known for its superb Fall color, this tree becomes a blaze of brilliant scarlet. A profusion of white flowers, 1½ inches across, are freely borne in the Spring. Native to Manchuria and Siberia, the Chinese pear is quite resistant to fire blight.

The willowleaf pear (*Pyrus salicifolia*) is a slender tree, 15 to 25

Purple-leaved Plum



feet, with graceful, weeping branches. Silvery-gray hairs decorate the foliage. Among the most ornamental of the pears, this holds its willow-like leaves late into the Fall. The white to creamy white flowers emerge in mid-May. Hardy in zones four through seven, it is native to Europe and Asia.

JAPANESE FLOWERING APRICOT (*Prunus mume*)

A showy ornamental, this rounded, upright tree is normally around 15 to 20 feet in height and equally wide. It has a loose, open crown with foliage that becomes golden yellow in the Fall.

From January onwards, the Japanese apricot has captivating, cup-shaped, scented blooms. Around an inch across, they're initially deep pink, but become lighter with age.

Japanese apricot grows well in full sun and partial shade. Somewhat less hardy than the peach, this is recommended for zones seven through nine.

PURPLE-LEAVED PLUM (*Prunus cerasifera* 'Pissard')

This densely branching, upright tree grows to 20 feet tall and nearly as wide. Introduced in 1880, it is the most widely planted of the ornamental plums.

The young stems are purplish. Vibrant, ruby red when they open, the leaves mature to deep purplish-red. Full sun is required for the best leaf color.

Swelling slowly, the pink buds open to reveal the fragrant, white or blush blooms, less than an inch in diameter.

Unlike the other ornamental fruits, purple-leaved plum bears small, edible fruits. Hardy in zones five through nine, this tolerates hot, dry Summers very well. Though numerous cultivars are on the market, their leaf colors tend to be pretty similar. Here are some highlights concerning the best ones for bees.

The Hollywood purple-leaved plum is noted for its leaves that are initially green. As they mature, these change to dark purple.

By far the hardiest of the purple-leaved plums, Newport is suitable for zones four through nine.

Purpusii has particularly attractive leaves. The purple color is in contrast to the tinges of white and ruby-red around the leaf margins.

Of all the cultivars, Thundercloud retains its brilliant colors best during the hot Summer months. This was introduced in 1937.

Vesuvius was released by Luther Burbank prior to 1929. It has cascading stems with dark purple leaves, about the most intensely colored of all the purple-leaved plums.

In the Spring, landscapes come alive with splashes of color from the purple-leaved plums and other flowering ornamental fruit trees. Much loved by bees, their blossoms yield nectar and pollen. **BC**

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

INTEGRATED BEEKEEPING – MAKING BEES A MEANINGFUL PART OF YOUR LIFE

James E. Tew

On this quiet day

To understand my present bee thoughts, it would help if you could be here with me. It's a gray, drab, early spring day. It feels colder than it is. Only the hardiest of birds are around the feeder and they're muted. The snow is gone, but the frozen ground is soaked. I'm writing this in my new, but unfinished woodshop. It's a lot like sitting in the middle of an empty two-car garage while searching for elusive creative ambience. I've waited all my life for a dedicated shop building and I intend to take my time putting this one together. I'm burning the last of the season's firewood in the wood burner. It's punky and water-soaked, so it smolders, pops, snaps and smokes a lot but gives off precious little heat. Overall, it's a placid, quiet day; good for anticipating and making my beekeeping plans for the upcoming months.

Integrated Beekeeping – the Concept

I've heard innumerable talks and read endless fact sheets and articles on Integrated Pest Management (IPM) principles recently. As a result, I feel safe in saying that we have all been beaten up with the philosophy of using multiple control techniques to suppress, but not eradicate, pests in our beehives. We're told to not automatically use the most toxic chemical we have when a problem surfaces, but save those for the occasions when such control procedures are really necessary. It seems to me that Integrated Pest Management is just common sense.

So, if that is Integrated Pest Management, then what is Integrated Beekeeping? Essentially, it's a term that I devised that's nothing more than common sense beekeeping. For most of us, beekeeping is *part* of the picture, but not the *whole* picture. As it were, beekeeping is *integrated* into our lives.

Integrated Beekeeping – My Family

I've mentioned many times that I am the family beekeeper. No one in my immediate family cares a whit about my craft – my passion. Then they read this they'll get snarly because they have listened to thousands of hours of my ramblings about bees. They'll remind me that they have spent thousands of miles watching for beehives on road trips. *(The deal always was, a kid seeing beehives from the car and has the sighting confirmed by another in the car got a dollar per hive with a five dollar maximum.* That summarizes my immediate family's interest in bees.

In my extended family, however, I have fared better. Both of my brothers and my Dad have an active interest in beekeeping. In my case, integrated family beekeeping does not mean that all family members are equally involved in beekeeping, but different members are involved in different ways and to different extents.

Now I have entered a new phase – being a granddad. This isn't an intentional effort to gloat but rather to consider the next generation within my family. Presently, my granddaughter is just a toddling infant, clearly having no business

around beehives, but how should I introduce her to the bees? We all know what is inevitably going to happen – a sting and an angry grandmother. So, I am considering a fence around my small home apiary. It's ironic that I am considering fencing my bees – not because of fearful neighbors, but because of my enlarging family.

Integrated Beekeeping – My Neighborhood

Only a few short years ago I didn't like people who had the concerns I now have. As long as I have been keeping bees, there have been lawsuits and threats of lawsuits. Fact sheets have been written for decades about how to be good neighbors and how to avoid conflict with our bees. In past years I was more combative. *"Bees are good for all of us and the environment – how could anyone doubt it?"* Well, everything changes. While I can't tell that our legal problems have increased to a significant extent, I do sense that law-suit payoffs are getting bigger (at least they sound larger) and I don't see insurance companies rushing to cover us. But there's nothing novel about beekeeping in this regard. There are innumerable commercial enterprises that face concerned insurance representatives. For whatever reason, I am now more moderate in my response to beekeeping in and around my neighborhood. Even if I win some future fight, it won't be without a degree of pain and suffering on my part so would it not be better just to avoid the fight at the outset?

Muddy beekeeping in a stuck truck.





The site of my future-fenced, neighborhood-friendly beeyard.

That's why my concept of a fence surrounding my beehives was interesting. Not only would it serve to keep me in better graces with my family – specifically my tiny granddaughter, but it would, at least cosmetically, keep me in better graces with my neighbors.

There is no *standard* beekeeper. Every one of us has different objectives and different hurdles in our bee operation. Presently, I have tolerant, but fearful neighbors. I don't know exactly why they tolerate my beehives, but thus far they have.

I realize that I owe my neighbors some reassurance and safety from needless stings, but what? At home my hives are clearly visible and readily accessible. To integrate my beekeeping into my neighborhood I need to isolate my hives so people, kids and pets don't wander into them, and so (*out of sight – out of mind.*) Other than the fence, I need shrubs or other plantings that cause my bees to quickly gain altitude flying over the heads of my lawn-mowing-neighbors. Ideally, I would like a small storage shed for immediate bee needs as well as ancillary gardening equipment, but that needs to come later.

Integrated Beekeeping – My Bee Interests

Most of us pursue some aspect of beekeeping because we enjoy it. We are not required to keep bees. Therefore, most of us should do whatever brings us satisfaction and pleasure from our beekeeping hobby. But for most of us, doing the same

thing time and again, becomes stale and we drift on to other things. One who has successfully integrated his or her beekeeping interests will have tried most of the common aspects of beekeeping such as pollen collection, comb honey production, beeswax candle production, queen production, or building equipment from lumber. Honey production and pollination will always be beekeeping's core, but there are many lesser enjoyable attributes of beekeeping.

Integrated Beekeeping – My Environment

In some circles, honey bees are not the "White Knights of Agriculture" but are exotic insects that have seemingly displaced native bees by efficiently gathering nectar and pollen that would otherwise have gone to other bee species. I have no intention of getting into that fracas. Honey bees are here and have been here for hundreds of

years, and they are going to be staying here for some time to come. While admitting that a few people will disagree, I count honey bees as vital contributors to our agricultural and environmental systems. When I manage my hives to help them reach full population, I am indirectly helping vast numbers of diverse plants get pollinated. True, legions of lawnmower operators see many of these bee-pollinated plants as weeds. But they are, in many instances food for wildlife, or are instrumental in soil conservation and management.

Due to our attention to honey production I feel that we lose sight of the significance of our bees' pollination services. Bluntly stated, we could readily exist without honey, but existing without bee pollination would be a serious challenge to human society. With this thought in mind, my concept of integrated beekeeping includes the culture and support of other bee species.

Integrated Beekeeping – Non-Apis Species

While readily admitting that my first love has always been for honey bees (*Apis mellifera*), to the best of my ability, I have always respected and supported the biology and pollinating activities of native bee species. It's a simple matter to modify a piece of hardwood firewood and bore holes about one-quarter inch in diameter and about three to four



A needy hive awaiting assistance.

inches deep. Bore as many as you like. Make as many blocks as you like. Suspend these blocks underneath the eaves of outbuildings and wait for the diverse population of native bees to show up. After a couple of years, turn the nesting blocks back into firewood. Dump a small pile of sand, the kind used in making concrete, in an unused area and don't disturb it. Tiny ground-nesting bees will come to it (as will the neighbor's cats.) These bees will not become pets. As are honey bees, native bees are very wild creatures. In short order, the nesting blocks will become magnets for parasitic Hymenoptera and many of the native bees' offspring will not survive, but some will. We, as beekeepers do this service out of respect for all bees and as supporters of environmental pollination.

Where I started

At this point, I would refer you to my opening paragraphs. Beekeeping is an integral part of my life. I keep bees, I think about bees, I experiment with bees, I write about bees. As do you, I truly enjoy beekeeping. But actually opening a hive of bees and honestly doing some bee task is only a small part of my beekeeping activity (and my hives generally show this). Beekeeping is many things other than hive manipulation.

Where I want to go

Though my interest in bees will always be disproportionately high, I want my beehives to be an integrated part of my personal sphere. I have a small flower garden. I want to install a small vegetable garden. I am building a wood shop where, no doubt, many of my projects will have a bee theme. I have made native bee nesting blocks and I have blue bird boxes all around (for the sparrows). I have bird feeders scattered at several sites for the birds that aren't smart enough to find wild feed. I want to improve my apiary to make it more neighbor-friendly (actually just more hidden). Nothing that I am planning to do is novel or trend setting, but just common sense.

The 2005 Season - so far. First Stuck Truck of the Year

At daylight, this morning, I was

out trying to get the truck out of the mud. A friend whose husband has tired of taking stings during the summer as he mows, tried to move a single colony to a more private location (See comments on family and neighbors above.) The hive was top-heavy and tall. The ground was slippery. Those of you with 4-Wheel Drive vehicles know the routine. Most of the time, 4x4 only gets you into bigger trouble. The truck initially stalled but by aggressively driving the truck and hanging on for the exciting ride, it did reluctantly come out. Problem is that the hive toppled over as the truck jostled along. This kind of story is common, but now the truck is out and the hive is moved. All is right with the world.

The Site of My Apiary Development

The apiary pictured in the photo is to the site of my future-fenced, neighborhood-friendly beeyard. I will keep you informed as I explore ways to make this happen. The fencing for sure and possibly a small shed - if I can convince my wife that this is a good thing for all the family. The hives will need to come out of the trees and into the sunlight. The ground is reasonably dry, but I am considering putting down gravel to give stability. Additionally, the TV

cable providing service to my side of the street runs across the back of my lot so I will need to have that marked before sinking post holes.

An Extreme Makeover

Though the weather has not yet cooperated, a colony that was a swarm a couple of years ago is in deplorable equipment and is away from the other colonies. This colony is ripe for an extreme makeover. Both the bottom board and the outer covers are rotted and the bottom deep is primarily home to mice. I look forward to bringing this hive up to standards and including it in my fenced garrison apiary.

That's my theme for the 2005 season

Integrated beekeeping in my integrated backyard where I will be using integrated pest management to control my hive pests. I will try to keep my neighbors happy and not antagonize my family. I want my hives to fit in and be accepted in the neighborhood. These are my early Spring plans for the 2005 season. **BC**

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Almond Chronicles

Small Scale Almond Pollination

John Jacob

In this segment of our saga we will cover two trips, first a checkup on the bees near petal drop and the third and final visit to the orchards to bring the bees home. Pollination is not for the faint of heart, as it is hard work, often with exceedingly long hours away from home. Although tremendously rewarding on many levels, things can go wrong and the best laid plans led astray. Murphy's Law definitely applies.

Our story picks up with a maintenance trip for the bees mid-way through their pollination duties. This trip is often my favorite part of almond pollination. I have found over the years it pays huge dividends to check your bees while they are in the blooms, especially in years when the weather is wet, and this year was very wet in almond country. Since this maintenance trip is usually relatively light duty, I opted to make a weekend of it and bring my eager five-year-old son and a good friend along for help and company. So far this pollination has gone very well with no grower complaints or challenges to the strengths of the hives. Your polli-

nation contract should state an agreed-upon average frame count and terms for an inspection should the grower feel slighted on hive strength for their pollination. A good contract will protect both parties. While we are on the subject of paper work I strongly recommend that you get liability coverage for moving bees before accepting any pollination contract. Things can and will go wrong with bees in public places. This could be both financially devastating or worse – lethal. That said, back to the orchard.

Since we are making a weekend of it the crew decides we should take the scenic route and visit the Sierra Nevada Brewery, and then stay the night in Chico after we return last year's package bee cages to a commercial beekeeper in Orland. Frequent stops and the scenic route are always nice with a young one on board.

The next morning it is time to work the bees after the relatively short drive to the Modesto area. The exact hive manipulations and examinations vary from year to year depending on many variables in-

cluding weather, goals, time constraints, and my mood. This year we brought along 700 pounds of drivert sugar for stimulative feeding so the bees would be well prepared for splitting and some inclement weather upon their return home. Feeding is a very simple chore with rim feeders. One simply pops the outer cover on a row of hives and pours the feed in. This operation can be performed in almost any conditions because the hive is not opened all the way up, and dry sugar will not stimulate robbing, which can be a major issue some years when hive densities are up in the almonds. I suspected that with hive densities lower this year build up would be great. Many growers rented half the number of colonies as normal, or could not find any at all.

My suspicions are confirmed when we pop the lids of the first few hives. It appears most of the colonies have nearly doubled their brood nest. Pollinating almonds can be a great benefit to the bees as well as the bank account. Lots of high quality pollen and warmer temperatures tend to be very stimulative for the bees. The other objective of the trip is to determine how the bloom is progressing so I can plan the bees' return trip home. Things have progressed a little further with the trees than I had suspected. The fact that petal drop is well under way tells me I will have to come back sooner than later. Petal drop is quite a gorgeous spectacle and evidence of the bee's job well done can be seen as tiny embryonic nuts begin to form.

The mid-way trip is drawing to a close. This particular trip was essentially a fun walk in the park. The next chapter of our journey is where things really get interesting, and at



Feeding sugar is easy this way.

times could nearly be classified as a misadventure.

Our last mission to complete the pollination circuit is to bring the bees home and pick up 300 pounds of bulk bees for a queen rearing project. Things immediately get off to a rough start. Thinking I will get double duty out of the rented flatbed, I plan a short trip to Central Point to pick up twenty cases of foundation that is supposed to be waiting; big mistake. A one hour job quickly turned into a three and a half hour delay from our scheduled departure time due in part to the fact that the freight company had trouble locating my load and a miscommunication between my trusty helper Gabe as to where to rendezvous with the truck. "Not a big deal," I think to myself, we can drive through the night, get a motel in the wee hours and have plenty of time to locate the bulk bees and load hives the following evening when the bees are done flying. Simple enough, right?

Well even the mundane things like getting a motel room on the way down prove to be way more than I bargained for. After 3:00 a.m. nearly anything will do, and we spot some motels near the next freeway exit and pull off. Gabe notices that a car in the parking lot is missing a couple of wheels, "...oh look there is one missing all four." As we look around, we notice that there is at least a half dozen cars freshly missing wheels. This clearly is not the motel for us, and we move on to the next exit and find a "swankyish" motel that looks like it would do just fine, but no, they are completely booked. Five a.m. is looming ever closer and I long for few hours of shuteye. Forty miles down the road, the third time is a charm and we find a bee grade hotel and sack out for a scant few hours.

At this point we are just a little short on sleep, again, but I am still optimistic that we can get back on schedule and begin the trek home tonight. We had quite a bit of time to kill before the bees were done flying so Gabe and I decide it would be prudent to size up the load of bulk bees so we can determine how we are going to stack the colonies to make enough room to fit them and snap a few photos of the bees' job well done. Fifteen 25-pound bulk



Early build up from pollen substitute patties.



Lots of brood later from lots of almond pollen.



Almonds forming, sign of good pollination.

Continued on Next Page



Petal fall is as dramatic as it is pretty.

bee cages will take up a substantial amount of bed space and we easily see that we are going to have to load the hives three high to make enough room. "No problem, I have done this many times before", I think to myself.

We decide to err on the side of caution and load the hives first and come back for the bulk bees, just in case we are too tight on room. I had given all three growers notice of when we were planning on loading bees and informed them that I would like payment then and everybody agreed to the plan. Gabe and I decide to start with the orchard we had got stuck in last time. Wary of potential quagmires we pull right up the orchard row and load the bees three high and six across.

According to our calculations, this will allow plenty of space for the additional cargo. Only one drawback, the bees went on as planned, but with them stacked so high I could see that we would have to be very careful backing back down the row. What, no back up lights? Let the delays begin. Dark is fully upon us by now, and it takes us close to an hour and a half longer than expected to get the bees loaded, get paid, and get on to the next orchard.

It did not help that the first grower wanted us to drive across town to meet him for the check. The next grower is very accommodating and actually supplies us with much needed coffee and helps us load the bees. I am looking forward to polli-

nating for him next year

By now we are far enough behind schedule I can not realistically see collecting the check from the last grower tonight, so we load the rest of the colonies and fortunately there is plenty of room left for the bulk bees. However, 2:00 a.m. is looming, and we still have to pick them up. We are approaching five hours behind schedule at this point, and my stress level ratchets up accordingly as I begin to see the implications for the drive home and the next day. We press on despite the thickest fog I have ever encountered. Visibility was only about 50 to 25 feet at times. In fact, it was so bad that it took us an extra hour to find the very same place that we drove right to in twenty minutes earlier in the afternoon. Exhausted and frustrated, we load the bulk

cages and head out into the pea soup again. Looking at the clock I realize that if we did the impossible and drive home nonstop, our arrival time would be the middle of the day. This is not a good time to unload bees, and the real kicker, we did not bring a bee net for the load, essential for day travel with bees. In fact some states have laws requiring bee nets. Undaunted, Gabe and I press on until about 4:30 am, and we are in the vicinity of the same hotel we stayed in the night before.

Unable to keep my eyes open any more, we check in. The plan is to hope the fog sticks around in the morning long enough for us to fuel, and to time our departure so we get home as late as possible so the bees will not have much flight time to imprint on the wrong location.

No such luck. It is clear and sunny by 7:30 a.m., so we hit the road before we loose too many bees and plan on fueling quickly in the country somewhere outside of town. This turns out not to be a good plan either. As we near our last eighth of a tank of diesel we make a desperation stop to check the load and determine the feasibility of fueling at a public place. Things do not look good due to the fact that it has warmed substantially, no bee net, and the bees seem hot in more ways than one.

After getting turned away for fuel, this trip is beginning to feel like a beekeeper's nightmare. We clearly need help because running out of fuel with a load of bees is definitely not an option. By now we are nearly back to Orland and I place a desperation phone call to the commercial beekeeper that I have done



Colonies in front, bulk boxes in back and no net. This is not the way to travel!

a lot of business with in the past. Lucky for us he is in, and he allows us to stop by and hose down the load enough to drive to a private fueling station. I could see he and his crew were having a good laugh, and feeling quite glad not to be us. Thank you for pulling our bacon out of the fire Ray.

A palpable feeling of relief settles in as we begin the trek through Northern California. We are home free as long as we do not stop again and take our time to arrive home sometime between 3:00 and 4:00 p.m.

What could go wrong now? I relax a little and immediately nod off while Gabe pulls an impressive stint behind the wheel; only to be awakened by the words "Dude, there is a snake on the truck." "Nice try," I say, thinking it was a ploy to wake me up for my turn behind the wheel. "No there really is a snake in the load." I look in the driver's side mirror, and sure enough there is a fairly large snake hanging its head about a foot over the side of the truck bed. I cannot believe that after all of our

excitement there was more to be had. I fought back the urge to stop and snap a photo of this spectacle because I did not want to loose any more precious bees. Besides, it had been on board for a good eight or more hours anyway, maybe the photo-op would still be there for unloading. The last hurdle for us, I presumed, was going to be the Siskiyou Summit, the highest point on Interstate 5 between Canada and Mexico, but no so such luck. After our decent of Mt. Ashland we are a mere 45 minutes from home, and what do we hit? Stand still traffic – the *only* possible hang-up at this point in our journey. As luck would have it, we narrowly escaped getting stuck in this accident/construction-caused traffic jam by skirting it on the shoulder and bypassing it all by driving through the weigh station which happened to be closed – another narrow miss. We never had to stop.

At long last we pull into home about 4:30 and park in the shade to wait for dusk to unload the bees. Gabe and I are completely ex-

hausted and do not relish unloading one bit, but it must be done. The snake was no where to be seen. How it got on the the truck I will never know.

This was one of my toughest pollination trips ever, and could almost be considered a manifesto on what not to do. This trip has taught me many things including: expect the unexpected, fuel before the bees are up, bring a bee net even if you don't plan on using it, and nothing is ever as easy as it seems. Adversity must be overcome.

Even after these trials and tribulations I look forward to 2006 almond pollination. If all goes well I will have double the number of bees and the prices should hold near or better their present levels. And, hand loading hives will be a not-so-fond distant memory. Many people say beekeepers are a little crazy; this trip was definitely for the nuts. **BC**

John Jacob is a commercial beekeeper from Rogue River, Oregon.

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STING STOPPER

Karen Kirsch



Amateur beekeeper Denver Blanton knew a little bit about stinging insects. He kept 15 hives and enjoyed building and setting up new colonies which he sold to others willing to face the stings of the hobby. He'd had a few himself over the years, but aside from the discomfort he hadn't experienced a severe reaction. When he did, it changed the course of his life. After years of research to perfect what had been a serendipitous discovery the resultant product is now commercially available guaranteeing instant and permanent relief from not just bee stings, but from all stinging insects.

It should be noted that most stinging insects are environmentally beneficial, but each year more than 1,000 Americans die from stings and bites. More than two million experience strong reactions. The arsenal of stinging insects includes three kinds of bees, two types of hornets, four kinds of wasps, a few varieties of nasty yellow jackets and fire ants – to name just a few of the most common assailants. Sure it would be great if you could avoid these creatures in the first place, but that's often easier said than done.

Those whose bodies normally react to the venom creates a burning, somewhat painful sensation, and swelling in an area up to 4" from the site of the sting. Allergic reactions can include severe life-threatening symptoms. Systemic reactions include pain and swelling beyond the sting site, headache, flushed skin, nausea and stomach cramps. Difficulty breathing, faint-

ness and a drop in blood pressure can also occur. This is serious! Those known to have severe allergic reactions often carry epipen or anapen to inject or inhale. The first step in preventing such unpleasant encounters is recognizing the enemy and avoiding his habitat.

Beekeepers take precautions to avoid the hazards of their profession, but may find themselves unprepared for attacks from other common stingers. The best advice is to know the enemy.

Yellow jackets are a nuisance found in just about every climate. Their papery nests are usually underground, but might also be in the walls of frame buildings, masonry cracks and woodpiles. Related to wasps, yellow jackets are extremely defensive. They sting repeatedly.

Wasps have long slender bodies which are black, brown, or red with yellow markings. Their nests, often located under eaves, behind shutters, or in shrubs or woodpiles are made of a paper-like material that forms a circular comb of cells which opens downward. Disturb these guys and get ready for an assault to remember! Attracted to sweets they sometimes fall into soda cans resulting in lip or mouth stings.

Related to bees and ants, hornets are larger than yellow jackets and black or brown with white, orange or yellow markings. Their familiar football-shaped nests are gray or brown and made of a material similar to that of yellow jackets. Nests are found high above ground on branches of trees, in shrubbery, on gables or in tree hol-

lows. Rapid movements, blocking their flight path or breathing on their nest pretty much guarantees stings. Since a component of their venom is a more intense pain stimulator than that of wasp or bee venom, their sting causes more discomfort.

Fire ants are related to bees and wasps. Originally from South America they came to southern America in the 1930's, but their territory is spreading and they present a danger to wildlife. Colors range from copper to black. Dome-shaped nests may get up to 18 inches tall. Fire ants attack with little provocation or warning! Firmly grasping their victim's skin with powerful jaws, the fire ant arches its back and inserts its rear stinger. As if this weren't bad enough, it then pivots at the head inflicting multiple stings in a circular pattern causing an extremely painful burning sensation. Within 24 hours a blister appears which will take seven to ten days to heal. It must be monitored for signs of infection. Their bites are especially dangerous for diabetics and others with circulatory problems.

Regardless of the culprit that gets you, when you're stung you want relief.

Mike Fultz of Hilham, Tennessee is enthusiastic about representing Denver's Sting Stopper, the product created by his late friend Denver Blanton. The Sting Stopper story is as unpretentious as the product name.

Electronics engineer Denver Blanton was working in a remote wooded area of Kentucky when he

Continued on Next Page

"If it was good enough to steal, it was good enough to sell."

was attacked by wasps. As an amateur beekeeper he understood the physiological effects of insect venom and he knew the sensation he was experiencing differed from bee stings. He was alone and far from any help or medical facility. Fearing a severe reaction he set about mixing small portions of whatever he could find that he hoped might counteract the venom on a piece of 2 x 4. The components of his experiments related more to electronics than medicine. Applying dabs of the various concoctions to his stings he was amazed when one of them worked! Denver grabbed his 2 x 4 and unlikely ingredients and headed for home.

Back home he refined his "discovery" into an ointment base. Weeks later Denver's eight year old son was stung 32 times on the head by wasps. His crude "bee medicine" may have saved his boy's life.

"Thirty-two stings to the head is enough to kill an adult," the doctors said, yet the child suffered no ill effects after being dabbed with the still-unnamed product. It was then that Denver knew his mission in life. Because of the expense involved in laboratory research it took three decades to perfect the salve now patented and sold as—what else – Denver's Sting Stopper

Mike, a lifelong horseman, hunter and fisherman was a recipi-

ent of Denver's salve in its early stages and he learned the product's value first hand.

"Friends and I were out on a trail ride. When my young mare hit a hornets nest we took off through the woods goin' about 100 mph," Mike recalled. After coming to a stop, both Mike and the horse were instantly soothed by Denver's balm. A female rider known to have severe allergic reactions was also stung. Before setting off to the hospital her stings were dabbed with the salve Mike had just used. En route to the emergency room the woman found she was experiencing no symptoms at all – no pain, no swelling and no breathing problems. The trip to the hospital was aborted and she returned to the trail ride. Her husband was so impressed he offered \$20.00 for the small amount of remaining ointment, but Mike refused. It was later stolen from his saddlebag.

"I knew right then that if this stuff was good enough to steal, it was good enough to sell," laughs Mike. And that's how he became the Denver's Sting Stopper distributor

The mustard-colored salve that smells slightly of ammonia is available in tubes retailing for \$2.00 and in jars for \$8.95. Denver's Sting Stopper has only been commercially sold within limited markets since 2002. Because it also works on ani-

mals Mike was invited to address a conference of veterinarians in Lima, Peru. The product guarantees instant and permanent relief and clearly lists ingredients on the packaging. Those who have tried it swear by it, but the company emphatically states that Denver's Sting Stopper makes no lifesaving claims and they advise users to seek medical attention as indicated.

"The business was built on character and we don't make any claims we can't back up," says Mike.

For more information, contact: doublemdistributing@yahoo.com


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"Varietal honey is worth more money. Use your journal to get these crops."

Let's hope that our May is just like Chaucer's description. May is the start of the nectar flow season in my middle eastern states. Depending on where you live, your nectar flow season can be anywhere from May into September, or even a bit later. With this spread of flowers you should be able to harvest at least one or two or perhaps more varietal honeys and sell your crops for a price reflecting that selection.

As I remember, you were successful in preventing swarms and your hive is full of bees ready to work. You will need your journal, not only for this month but also for the next few months so that you can record what nectar flowers you see blooming and how well the bees are doing in their harvest of those. You must remember that you need to be a Weather Watcher. Make some notes in your journal because the nectar produced by a plant, and bee flight, are affected by the weather.

If you live in black locust areas you may have a nice early crop. However the black locust blossoms are fragile and are frequently destroyed by wind and rain. Furthermore, for reasons known only to the tree, black locust can bloom but not give you an abundant crop of honey.

Let's assume you are lucky and your hives are full of beautiful black locust honey. Quick! Before the next nectar flow, remove and extract that black locust. Now you have a start on producing the desirable varieties. Just put the wet honey supers back on for the next crop.

With the small hive beetle invading our hives and honey houses you cannot just store those supers of black locust honey until you get around to extraction. Besides, immediately reusing honey supers is economical - you do not need a skyscraper to store supers.

Depending where you are in the middle eastern states you could hope for a honey crop from a number

When that first crop is capped - harvest fast!



of different trees and plants. Some will bloom early, like wild cherry, the many brambles and tulip poplar. Basswood is a Summer bloomer. Sweet clover, both yellow and white, may be abundant or it may be just a roadside "weed." White Dutch clover can be plentiful in rural areas. Unfortunately in urban and suburban places it is considered an undesirable weed in lawns. Too bad, really, since every kid needs to step bare-footed on a bee busy working the clover.

In rural areas the many wildflowers will give good honey crops. With an appropriate name, wildflower honey can be considered a varietal.

August generally means a dearth of nectar-producing plants, but then early Autumn brings the golden-rod - a major honey plant in some areas of the middle eastern states. You will be busy with your journal as you record the nectar sources, the weather, and the nectar collected.

Harvesting crops of two or more varietal honeys is a bit of a challenge for the hobbyist beekeeper. The honey extracting is frequently done in the kitchen or in the garage or the basement. The extractor is stored in a back corner of somewhere, not easily accessible "since it is used only once a year." Nevertheless, I suggest you use it several times.

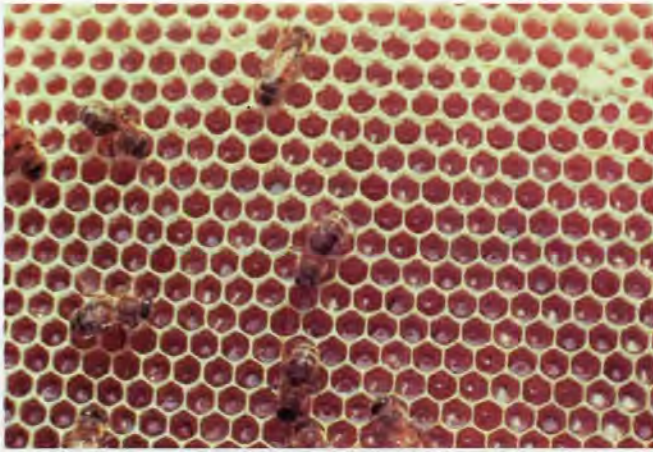
The extractor, even the smaller ones are bulky and awkward to store. The related equipment - uncapping bucket or tank, strainer, extra buckets, perhaps a settling tank - are probably all stashed with the extractor and have to be hauled out for honey harvest.

You need to discover a good Spring/Summer storage area for your extracting equipment. Does this mean you have to clean out the garage or part of the basement? Probably. But just think of the treasures you will uncover - the garden clippers that fell apart when you lost the nut and bolt holding the halves together, an innertube full of holes, and the fishtank with only three sides.

An extractor can be stored on a dolly. No, you cannot leave it on a dolly while being used, but it may help you to move it to your extracting area. One of those nice plastic bins, available at hardware and home improvement stores, would make a good storage place for your uncapping knife, cappings scratcher and other smaller pieces of equipment you use at extracting time. How about another dolly to move your honey supers around - one for full supers so you do not have to carry each one separately, and another dolly for the empties. Use an inverted telescoping cover as a drip pan.

Some of the beekeeping equipment catalogs show handcarts and other equipment for moving both hives and supers. The hardware and home improvement stores have a great assortment of carts, all kinds of

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Use your wet, drawn comb for that second crop.

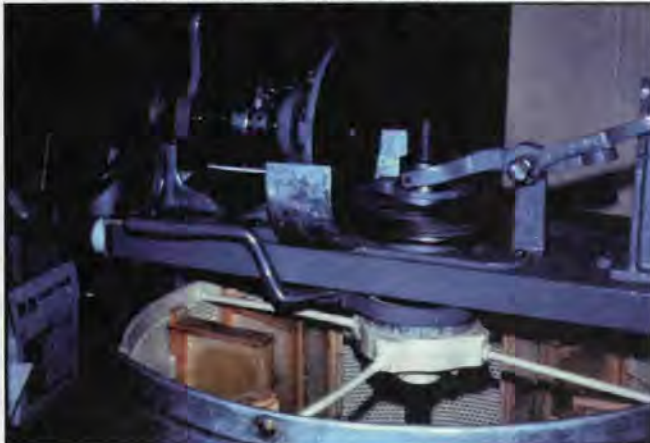
sizes, wheel sizes and ways to push or pull. Perhaps one of those is more convenient for your operation.

With a little planning you can have the extractor readily available. Moving equipment and supers with dollies and carts takes a big strain off your back and makes cleanup much easier.

Basements can be a problem area for extracting. The ones only available down a flight of stairs are the most difficult to deal with. Somehow the heavy honey supers have to get down – the best direction for something heavy – and then back up – the best direction for something light. However going up and down steps for two or more extractions during the honey season makes producing varietal honeys seem a dumb idea. You could build a ramp and use a cart. You could even invent a wonderful Rube Goldberg device for getting the supers down and back up.

Perhaps this is the time to build a small honey house. If you have increased the number of hives in your apiary and foresee an increase in the amount of honey you will be producing, you will soon be tripping over buckets and possibly looking for a larger extractor. An alternative is to build a storage shed for the miscellaneous contents of the garage and make part of the garage a honey house. In either case you are all set up for extracting more than once a season. Since you will be earning more money selling varietals, put some of that away for improving your extracting facili-

Make your extractor easy to use, and easy to store, and you'll find varietal honey easier to produce.



ties. Maybe you can even sell some of the wonders you unearthed in cleaning up the garage.

Let's return to decisions about supering your hives. The decisions start with whether you have drawn comb or foundation in them. Empty drawn comb is an incentive for bees to fill it up so, as long as the nectar is available, put multiple supers on your hives. Here are some more notes for your journal. How many supers, when? Check inside those supers to see the progress the bees are making. More notes for the journal. These can be brief – "filling up fast," "not much going on," "needs some frames moved around." Still more notes. "Everything almost capped," "full but not capped yet." Include some dates and don't forget those weather comments.

Times of high humidity – and those can be common during the Summer in my middle eastern states – means the bees will have difficulty evaporating the water from the nectar. Good hive ventilation is really necessary for good honey production. Prolonged periods of rain can reduce your honey crop. You can see why weather comments will make your journal valuable.

Keeping track of the progress of a particular honey flow can help you decide how many varietal harvests you can have in a year. In the past you probably put honey supers on and forgot about them until time for extracting all at once. You may have noticed differences in the colors in the combs and just went ahead and combined all the honey. With the premium prices for varietals and increasing demand for them, it is definitely wise to try for at least two harvests. True, each year is slightly different, but after a couple of years you can refer to your journals and begin to see a pattern.

Supering with foundation should be done during a really strong nectar flow. Then the bees have a good reason for making comb. Don't expect too much of them at one time. Give one super and let them start. Then note in your journal the progress they are making. Note down also when you add a second super or a third. Then you will have an idea of what your bees can do. Add some notes about the size of your colony and the condition of your bees as well as brood pattern of the queen. Make that journal a valuable document even if you are the only one who can figure it out.

As mentioned earlier, wildflower can be considered as a varietal if its name seems to set it apart from another one of your honeys. Names such as "Spring blossoms" and "mountainside meadow flowers" make wildflower honey seem like a varietal and give it extra appeal.

Although May is a busy time of year for beekeepers and for gardeners, and even for outdoor projects such as painting the shed, you need to make multiple extracting easy.

With the aid of your journals you are beginning to have a good idea of your honey plants and your honey crops. Even if one of your varietals is a small crop compared to the bulk of your honey, an increased price may well make it highly worthwhile. **EC**

Ann Harman moves her extractor back and forth around her home in Flint Hill, VA.

Riding With The **BIG BOYS**

Dick Marron

I'm a novice beekeeper with three years experience; it's really four if you count the year when I was 14 (57 years ago). I've been to EAS and ABF meetings; local club meetings monthly and read a lot. I have 20 hives and want more. I've been wondering what it would be like to ride with the big boys. Intuition tells me that it's not something you can understand by reading or hearing about it. (Like marriage, childrearing or skydiving—all equivalent in my view).

You big guys can quit reading now but I thought my fellow hobbyists would be interested. I got myself into this by letting a few emails fly. Since I was going to Florida anyway, I wanted to hook up with a commercial beekeeper and learn something. The thought of writing about it came later.

Enter Dave Arters. At a thousand hives he talks about bigger "big boys." Still, he's big enough for me and was kind enough to let me visit. He started at 14 when his dad began the hobby. When Dave was twenty he had 40 colonies of his own. He's dark haired, husky and except for the beekeeping, seems normal in every way (I'm kidding him here. I'm truly grateful for his time.) He's now 42. He's agreed to let me spend a day with him.

His bees finish their cycle in Oct. after a good bite at the Goldenrod crop in Fredonia, N.Y. (I looked it up. It's where he makes his home, near Buffalo, N.Y. No wonder he clears out in the winter.) He loads up in October and comes to winter in Florida, with one thousand colonies. He thinks that perhaps 600 survived this year to make splits from. "It was the same way last year. Everyone (big) always loses half

of his or her bees. This was true even before mites." I can't help wondering what the percentages would be in CT where my bees are freezing. It's January 29 and we are going out to make splits. The expectation is: the making of 80 splits in a day. This, I want to see. He wants a total of 1,200 colonies to "go to oranges." We are "going to watermelons" in a week or so. (Notice the "we"? I join up fast.)

He's tried to warn me. "I really trash my bees." By this he means that he will pop open a colony, quickly divide it's resources, slap a queen cell into each half and put the lid on. Viola! Two hives from one! Already, the romance is starting to fade.

"I really trash my bees." Behind the phrase, the psychologist in me hears something wistful. Perhaps

I'm already trying to put the romance back in but I imagine a quieter, gentler making of splits that he may have done as a boy. In those days, for instance, he took time to find the queen. Now he actually ignores her existence. "In fact, I expect she will be balled because of all the disoriented bees in the air. That way the about-to-emerge queen in the cell I introduce, will be assured her primacy. This will happen 80% of the time."

The queen cells come from a breeder, "just down the road. They travel in an incubator."

I've never seen one. I was unimpressed. The most important element in all this, traveled in a Styrofoam cooler thing with a heater that plugged into a cigarette lighter thing. (Inverter) "I don't study the genetics in too much detail because I expect the breeder to be right on top of that. I do think it's true that the breakthroughs in disease and mite control will come in the form of resistant bees. This is the light at the end of the tunnel!" When asked what kind of bees he's using he mumbled something about, "... a couple of lines the breeder is working on." Another time the mumble came out: "Mutts!" (I of course brag about my NWCs).

He's from N.Y, I'm From Ct and we meet in Dade City, Fl. at the side of the road.

Pallets of colonies ready to split.



My RV trundles along after him. Grandson has already abandoned me to ride in the big truck. The road becomes unpaved. We go through a locked gate. After half a mile of cow pasture we come to the bee yard. I had imagined rows and rows of hives like I've seen in pictures. Here there were rows and rows of pallets of double-deep colonies.

The first thing I notice is what looks like a swarm of bees around a group of barrels. I look closer and the barrels are full of corn syrup topped with a forkful of straw. The straw keeps them from drowning. A big container of corn syrup, (a "Tote," holding 275 gals) is standing by to refill them. *"I will go through two tanker loads a year. The bees will empty those barrels in four days."* (There are five barrels. They are 50 gals each). I reflect on all the time I spent building hive-top feeders and mixing sugar syrup.

I think the critters look busy. *"Wait a little while,"* he says. He moves a pile of pallets with the forklift. I had an idea that the pallets were also the bottom-boards. Now I see them for the first time. To my surprise he uses screened bottoms built into the pallets. *"I've been using them for years . . . long before it was trendy."* By designing and building his own pallets he has managed to trim 11 pounds from each one. Obviously, the screens are open all year long. *"Weight gets to be really important when you load a semi. It's easy to get too heavy"*. Each double deep colony will yield two singles. These will load four to a pallet and two pallets, one on top of the other to a moveable unit. *"This will cut the loading time in half."*

Then we start the work. As the deep boxes are reorganized, they must be scraped. This is not just for neatness. *"I have to be able to get frames out easily. Otherwise it will be a bad problem when I get to blueberries. The growers actually inspect to see that they get eight good frames of brood otherwise they won't pay. There are many reasons to keep the boxes clean in a big operation. All of them have to do with time."*

We are talking as we work. My grandchild and I are getting into it. Scrape the pallets, scrape the boxes then move the finished colony.

"Don't just get one lid, carry five at a time. Don't put that there, move it closer. Work on top of that pile so you don't have to bend over" All movement is judged by whether it saves time or work. Grandchild Richard and I may have helped a little but I doubt if it made up for the time Dave lost by talking to us.

As we moved from pallet to pallet and opened more colonies, more and more bees were dispossessed. They were forming beards here and there. They had to be shaken off the boxes we needed and so there were large numbers of bees on the ground. Their old home had been moved so they couldn't go back to it. By the time we had done thirty splits the buzzing was enough to make us need to raise our voice to be heard. Then I recognized that our efforts had started the apiary robbing. *"I expected this, that's partly why I kept some feed in front of them"*. (And here I thought that would be a good way to start robbing). We kept going and the confusion kept growing. I was happy when he called it a day.

I assumed the use of queen cells would save on any introduction problems. When do they go in? *"I'll have to let them settle down a little. That's a delicate process. I couldn't do it with gloves on, for instance"* After all that we had done, he would have to go back to each hive again the next day or so. Do you have enough drones at this time of year to mate these queens? *"I may not, but wherever you go in Florida you are surrounded by bees. There will be plenty of drones."*

Checking for queen-rightness, brood patterns and the many ills that befall a colony of bees is a luxury that the large operator has not much time for. Some quick inspections get done usually in the context of other operations. Seems like it requires more mastery of the art but delivers less fun. This is another casualty of growth. Who was it that said, "Be careful what you wish for, you may get it"? Or, "When the gods wish to punish us, they make our dreams come true?" Dave wanted to be bigger. He still wants to be bigger. I'm starting to reconsider.

Anyway, the bees are on red maples right now; next week it's

melons, at some time there'll be a gallberry flow. All this is getting them ready for oranges. After that they'll "go to blueberries" in Maine. *"I don't have the contracts to go to apples"*. After Maine, comes New York state and the goldenrod/aster flow.

It's a week later and I drive to Dave's house to help with the load going to watermelons. The RV is handy for this. I can stay the night and be up at five AM for the early start. We start loading at about four PM. I dash around with the smoker prepping the bees a little. I have to keep moving adroitly (from my point of view) so I don't get a forklift (AKA Donkey, Swinger) boost in my work when I bent over. I shouldn't have worried. He wouldn't have hit me. These guys can write their name with this equipment. The hives are one and a half stories. *"I nursed these splits because I didn't want to destroy the integrity of the colonies. At most I took two frames of brood from each. They still have the original queen."* I now understand that "nurse" and "trash" are somewhat technical terms, within the brotherhood, for how much care was taken when the splits were made. It takes a couple of hours to load the 248 hives. And this is not a semi. It'll take another trip to fulfill the contract.

When we put the heavy net (A \$1,000 item) over the load, it is nearly dark. Four or five heavy straps are used to ratchet down the load. It was one of my jobs to twist them, to keep them from "singing" at highway speeds. We make our way back to paved roads in the dark.

Five A.M. comes early (Who knew?) We bring a coffee with us so we don't have to stop. *"I'm doing this with another beekeeper in a sort of 'limited partnership.' I've never been to where we are going and I've never met the guy. He told me it's about a three-hour drive. He'll meet us."* The guy was late but we made connections. He then proceeded to lead us another 30 miles or so. By 10:30 a.m. we are bouncing the bees over the target farmland. At one point Dave had to lock in the front wheel drive and roar us over some soft sand. The other keeper had the swinger for unloading, so it wasn't

necessary to bring one. (Otherwise it follows along on its own trailer.) I picture a hundred meetings like this in the year to come. All things come to an end and we are finally finished.

"I'll go back there in a week or so with supers. I should get three supers of honey from this spot. I'll requeen at that time". Knowing by now that he wasn't going to find 500 queens and kill them I asked, how he would do that. "I'll drive the old queen down with smoke, then I'll put in a queen cell with a cell-protector over it. 80% of the time the new virgin queen will win the battle". Again with the 80%!

Seeing the immensity of Florida agriculture was an education in itself. This was near the area that got hit hard by the hurricanes but outside of Punta Gorda itself, I didn't see any damage. Another migratory friend from Michigan told me that he got cancelled out of his citrus contracts this year because of the storm damage.

Back on the road and a 2:00 p.m. lunch was in order. Still time conscious, Dave said, "forget it" to two places with a long line. Eventually we had an unremarkable lunch (I'm being kind) at a waffle-house. By the time we were back home I was happy to call it a day.

The equipment is standard; hives are 10 frames. The plastic one-piece (black) Pierco frame/foundation is what Dave uses now. "Four or five of us will get together and buy a semi-load". (It contrasts in my mind with my looking eagerly for the UPS truck for my 100 frames, etc. to arrive). "That's the only way to get a good price. I try to cycle out the old comb. Whenever I see a distorted comb or one that is very dark and heavy (when empty) I toss it. Heavy combs make less brood and contain less honey. I consider it to be a sink for chemicals and disease. Europe has been doing this for a while. Colonies are sometimes one deep and sometimes two deeps, depending on what is going on in the operation". All covers are the migratory type. In truth, these "covers" are slabs of marine grade plywood without cleats of any kind. "There are a number of reasons for this type of cover but the latest is that inner covers provide a sanctuary for the

small hive beetles".

On small hive beetles: "I have tons of them. How many do you want? I shudder when I do it but I control them with Checkmite. We need something better." He actually showed me two beetles. It didn't look like he had tons of them and they didn't look all that imposing. He talked about using Guardstar on the ground before he returns in October.

On wax moths: "I let the frost kill them. They are much more of a problem with used brood comb. In an emergency, I just leave them in the open. The moths won't lay eggs unless it's pitch dark. A keeper I know has steel racks for this technique. The rain won't hurt them".

On AFB: "Of course I medicate for AFB. I use Terramycin twice a year. Tylosin is arriving just in time. Resistant AFB is just around the corner. We pollinators get blamed for spreading disease. Doesn't anyone realize that if we had much disease in our operations ... we'd be out of business? For economic reasons we do more to handle it than any number of inspections ever will".

On Extracting: "I pay 12 cents a pound for someone else to do it. Most of my crop is sold at wholesale".

On yields he could expect: "It really varies". A per hive number would have been helpful but he doesn't speak in those terms. Frames cycled out are in numbers of pallets, honey is measured in barrels and bees in semi loads.

On romance: "There's romance for me in following a couple of semis across the country. Florida is hot and dull but it's beautiful trucking into Maine! "In 'Following the Bloom', the book by Douglas Whyntott, he calls us the 'Last American cowboys'! I like that."

In my humble opinion, if any business is a crapshoot, it must be this one. There are so many variables over which there is no control; it's a wonder to me that anyone wants the job. Traveling from Florida to Maine in a vehicle that measures gas mileage in single digits is not cheap. Imagine what a higher fuel price would do to a season's profit, especially after the contracts have been set. Honey prices vary. (As I write this they are

dropping and fuel is going up!). And Mother Nature is a fickle friend. A cold wet spring will delay build-up and queen availability as well as the number of drones available. As we know she can wipe out a honey flow on a rainy whim. This bedevils a 'keeper' who is on a strict schedule to meet his pollination contracts.

To top off the deal, mites and disease are ticking bombs that threaten to explode at any time. It's happened before.

On the human side, this is basically a one-man operation. It seems to me that a bout of the flu could stall things at a critical time, though I suspect it would have to be a near-death experience to slow Dave down.

Dave's not alone. "I trash my bees but if you think I'm bad, let me tell you about an operation I saw. A guy I know has a great big building. He backs a semi-load of hives up to it and brings them inside. With a blower he blows every last bee out of the hives. They cluster on a net arrangement he hangs from the ceiling. He extracts the honey and puts the brood, etc. in a new hive. Then he scoops a few pounds of bees off the cluster and dumps them in also. He adds a queen cell, slaps the lid on and loads them back on the semi for the next pollination job. Some guys use a trolling motor to mix medication with syrup and cement mixers to mix pollen substitute!"

One point occurs to me. With the stress the migratory bees are under, it's too bad the survivors (who must be tough) can't be part of the next generation of breeders. It's easy to see how we can't expect these busy fellows to do a lot of breeding.

I may have overstated the difficulties but if you don't think it's a tough business, check out the "for sale" pages in the bee magazines sometime! **BC**

Dick Marron is a freelance writer and hobby beekeeper from Connecticut.

The PERFECT SWARM

Mike Niemeyer



1. Swarm discovered in the beeyard.



2. Perfect location, close to the ground, and close to the yard.



5. Bees shook - plop, right in the box



6. Cover on - job complete.



3. A big one.

4. Box set up right beneath the cluster.





? DO YOU KNOW ?

Bee Breeding

Carrence Collison

Mississippi State University

The goal in bee breeding is to concentrate and intensify desirable characters in a strain or line of bees and at the same time eliminate the undesirable ones. There is some evidence that some diseases can be controlled by producing genetically-resistant bees. Also, selection for certain behavioral traits may make a selection more tolerant of the parasitic mites. Other desirable traits may include increased honey production, improved wintering ability, increased pollination effi-

ciency, lower swarming tendencies, and reduced defensive behavior. In order to have a bee stock improvement program, it is imperative that the individual have a good understanding of the bee's reproductive biology, basic bee genetics, methods of selection, mating behavior, queen rearing techniques and instrumental insemination.

Please answer the following questions to determine how familiar you are with these topics.

Level 1 Beekeeping

1. ___ The sperm in the queen's spermatheca is maintained in a state of quiescence with very low metabolism. (True or False)
2. There is a rapid increase of _____ in the blood of a queen as she starts to lay eggs.
A. ecdysone B. neotenin
C. juvenile hormone D. vitellogen
E. brain hormone
3. ___ What is the primary purpose of maintaining two-queen colonies? (1 point)
4. ___ What are the two main ways in which broodnests are joined in two-queen colonies? (2 points)
5. ___ The drone's testes are largest while they are in the pupal stage. (True or False)
6. ___ As queens age, both the number and quality of sperm available in the spermatheca for fertilization may decline. (True or False)
7. ___ When a queen is removed from her mating nuc after she has been laying eggs for a few days and placed into a mailing cage, she continues to lay eggs for 24 to 48 hours. (True or False)
8. ___ Allowing a colony to supersede their queen often results in the loss of selected traits. (True or False)
9. ___ Sperm within the spermatheca has a strong tendency to clump in bundles or layers. (True or False)
10. ___ Why is it important to requeen a colony that was started from a captured primary swarm during its first season? (1 point)
11. ___ Drones only have daughters, no sons. (True or False)
12. A drone's sperm count goes down after they are about ___ days of age.
A. 40 B. 50 C. 30
D. 20 E. 10

Advanced Beekeeping

13. ___ Black queen cell virus affects adult queen honey bees. (True or False)
14. ___ Mother-Daughter mating is a form of back-

- crossing in which a virgin queen is mated to drones derived from her mother (True or False)
15. ___ Midnite and Starline queens were developed using a inbred-hybrid breeding system. (True or False)
16. ___ The most intensive form of inbreeding is self-fertilization. (True or False)
17. ___ The expression of quantitative characters (traits) is often governed by one gene or pair of genes, whereas, qualitative characters are dependent upon more than one pair of genes and are more susceptible to environmental influences. (True or False)
18. ___ The more closely related individuals are, the more inbred their progeny will be. (True or False)
19. Using the self-fertilization technique in bee breeding, brood viability will be no higher than ___ per cent.
A. 75
B. 25
C. 20
D. 40
E. 50
20. ___ All of the drones produced by a queen are genetically identical. (True or False)
21. The following frame prepared with strips of foundation for rearing queens is known as the _____ method of queen rearing.
A. Miller
B. Doolittle
C. Alley
D. Smith
E. Jenter
22. Why is it undesirable to examine a colony when they have a virgin or newly introduced queens or queens that have just mated? (1 point)
23. Give two reasons why it is difficult to find a virgin queen within a colony. (2 points)
24. Name one advantage of using a closed population breeding program over the use of an inbred-hybrid breeding system. (1 point)

ANSWERS ON NEXT PAGE

?Do You Know?

Answers

1. **True** The sperm stored in the queen's spermatheca are maintained in a state of quiescence with very low metabolism. The cell wall of the spermatheca allows the active transport of oxygen and nutrients. Oxygen is supplied by the tracheal net and nutrients are supplied by the spermathecal gland. These special physiological conditions help to maintain the sperm's fertilizing ability.
2. D) vitellogen
3. The management of bee hives as two-queen colonies seeks to maximize the amount of surplus honey that can be harvested.
4. Horizontally and vertically- In the horizontal configuration, the two brood chambers are placed side-by-side, and the honey supers are added on top of them, in a single stack that is straddling the adjoining walls of the brood chambers. The brood chambers need to be closed with a lid that is half the width of the hive body. In a vertical arrangement, the two broodnests are separated by queen excluders and honey supers.
5. **True** The testes of drone honey bees reach their largest size during the pupal stage. When they emerge from their cells, the testes are enormous, white bean shaped bodies which occupy a large part of the space in the abdomen but by the time the drone is sexually mature (about 13 days after emergence), they are reduced to small, greenish yellow strips of tissue, all of the sperm having passed through the coiled tubes of the vasa deferentia into the seminal vesicles.
6. **True** As queens age, both the number of sperm and quality of the sperm available for fertilization may decline. Comparison of queens that were two, 12 and 24 months old that had been inseminated with the same amount of sperm indicated that the total number of sperm decreased significantly with the age of the queens. The percentage of non-viable (dead) sperm remained low in the two and 12 month old queens (around 21%) but increased to around 34% in 24 month old queens.
7. **True** A queen removed from a mating nuc that has been laying eggs for a few days will continue to lay eggs for 24 to 48 hours after being confined in her mailing cage. She will start to lay again within a few hours to several days after she is introduced into a colony. The effect of this confinement, the change to an artificial food source and temperatures that may range from 20 to 30 degrees lower, certainly cannot do the queen any good.
8. **True** Queens when they are superseded often lose selected traits, as a result of random matings, receiving semen from many different drones. Many of the traits that were selected for through a bee breeding program are lost since the various characters (traits) are influenced by several gene pairs and multiple alleles.
9. **True** Sperm have a strong tendency to clump and form layers within the spermatheca. Evidently, sperm does not mix to any great extent in the oviducts. Once in the spermatheca, the ejaculates of the various drones mix to some extent.
10. Primary swarms normally contain the older queen that was present in the hive when the swarm issued. Therefore, this older queen should be replaced soon after the swarm is captured and a new colony is established.
11. **True** Drones only have daughters, no sons since drones are normally produced from unfertilized eggs.
12. D) 20
13. **False** Black queen cell virus, identified in bees from Britain, Europe, North America and Australia, affects developing queen pupae in the capped-cell stage. Diseased larvae are pale yellow and have a tough sac-like skin similar to that seen in sacbrood-infected larvae. Infected pupae rapidly darken following death and eventually the walls of the queen cell become dark brown to black in color.
14. **True** Mother-daughter matings are the most frequently used in breeding programs where rapid inbreeding is the objective. This type of mating is effectively back-crossing to the mother. A virgin queen is mated to drones derived from her mother.
15. **True** Inbred-hybrid breeding systems have been used commercially to produce some well known superior stocks. Starline and Midnight queens originated by the late Dr G.H. Cale, Jr., of Dadant and Sons, Inc. were developed using this method.
16. **True** The most intensive inbreeding system is self-fertilization. Virgin queens are stimulated to lay eggs by treatment with carbon dioxide. Two, two-minute treatments administered one or two days apart are usually sufficient. Drones produced from these virgin queens are then used to instrumentally inseminate their mother.
17. **False** Traits or characters are often classified into two general types: qualitative or quantitative. Qualitative characters are those that are either fully developed or do not appear at all. Quantitative characters are those that appear in varying amounts or degrees. The expression of qualitative characters (traits) is often governed by one gene or pair of genes, whereas, quantitative characters are dependent upon more than one pair of genes and are more susceptible to environmental influences than are qualitative characters.
18. **True** Through inbreeding, gene pairs are put into the homozygous condition and the system is used to keep particular genes in the line. It tends to achieve this because the genes which the progeny receive come from common ancestors and are therefore more likely to be identical genes than if they come from different ancestors. Inbreeding involves the mating together of individuals more closely related than the average

of the species. The more closely related the mated individuals are, the more inbred their progeny will be.

19. E) 50
20. **False** The drone has no father, and has only a single set of chromosomes from his mother. The fact that drones receive chromosomes only from their mother does not, however, mean that a queen's sons are all identical. She has a double set of chromosomes, and in the reduction division (meiosis) some of her mother's and some of her father's chromosomes go into each egg, but not the same assortment. Thus, her sons will have a variety of different genes.
21. A) Miller
22. Colonies should not be examined when they have virgin or newly introduced queens or queens which have just mated, if such examinations can be avoided. Such queens and their attending bees are nervous, and the disturbance of jarring or of opening a hive may cause the workers to ball the queen.
23. Young virgin queens are not as attractive to workers as are laying queens and thus you will not find a retinue of nurse bees

around them.

Virgin queens are smaller and are more prone to run and hide than are laying queens.

24. Maintains a higher brood viability since you do not have to deal with inbreeding depression. Maintains greater genetic variability (maintenance of more sex alleles in the population). Semen from a large, equal number of drones from each breeder queen of a closed population can be pooled, homogenized, and used to inseminate all daughter queens.

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

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

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

INNER ... Cont. From Pg. 10

Oh, just a quick question. What happens when those offshore folks get resistant *Varroa*, small hive beetle, resistant AFB and all the rest, and they don't have the bees to send?

What then?

Well, ask a honey packer what happens when imported honey isn't available to fill contracts, or costs more to buy than the selling price. Half the honey eaten here comes from off shore. How soon will how many honey bees be the same?

Here this year there was an abundance of Winter. Perhaps, after several gentle years, maybe the Winter we had was average. In any case, the ice and the snow, more snow and more ice and then the really cold days took their toll.

Nature, in her wisdom, doesn't neglect things for long. Sometimes she does for awhile though. Gentle Winters, little snow, barely any ice and easy breezes for two, three, or more Winters past have been easy on the old, the fragile, the tender wild things in my yard and garden.

This year the ice storms, the wind storms and the snow storms came and took their toll, and the soft woods shed branches like pick-up-sticks.

Whole trees succumbed in the gravity war, littering equally forest floors and elegant estates. Brush piles abound this Spring.


This natural pruning keeps things in perspective, that's for certain. The harder Winter that prompted this pruning excised as well the least hardy individuals that live in and around the place.

I imagine the smallest in the rodent population took a cold, wet-Spring hit, and early insects and other little things, too, were broken and battered. We've needed these thinned for a bit - there were just too many.

But sad is the oak that lost a whole side, and the red maple next to it that finally died - both from the Winter that just wouldn't quit.

But more light falls where the branches are gone, and other things grow in those once shaded spots. It sorts itself out.

Clarence Collison



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GLENNINGS

MAY, 2005 • ALL THE NEWS THAT FITS

GLENN L. GIBSON



Glenn L. Gibson, 87, passed away April 3 at his home in Minco, Oklahoma. He was born April 8, 1917 in Harmon County, Oklahoma to Charles and Minnie Gibson.

Glenn Gibson has been a strong voice in the beekeeping industry and in beekeeping politics at the local, state, and National level for many years. He is the only person to have served as President of both American Honey Producers and The American Beekeeping Federation. Shown here with Senator Robert Dole during one of his many lobbying trips to DC. Glenn was a columnist for *Bee Culture* for many years, and we will have additional information next month.

OBITUARY

Donald Hewetson Wardell, 84 died November 25, 2004 in Warsaw, Indiana.

He was born May 25, 1920 to the Reverend General Isaac and Maude Hewetson Wardell on the Six Nations Indian Reserve in Ontario, Canada. He married Marcia Lowe August 6, 1960. He was a World War II veteran of the

Canadian Army. He graduated from the London Bible Institute in 1947

A charter member of the Indiana Beekeepers Association, he was known around the Winona Lake areas as "The Beekeeper," and was often called upon to catch bee swarms.

Honey Wound Medicine Headed For The U.S.

Bee product manufacturer Comvita said its new manuka honey wound-dressing product has taken almost a year longer than expected to get European certification.

Chief executive Graeme Boyd said it was Comvita's first foray into medical products and the amount of regulatory controls

and requirements were greater than first realized.

"It's probably something we underestimated to some degree," he said.

Comvita said it would soon begin the certification process for the United States, noting that U.S. Food and Drug Administration approval could take two years.

Getting Over Fear Of Bees Will Take Time

My six-year-old niece recently went on a canoeing trip where she was stung by a bee for the first time. Now she won't spend any time outdoors because of her fear of bees. This is hard to deal with. What can I do to help her overcome this fear?

It's hard enough to deal with an irrational, unfounded fear, but when fear is grounded in a real, recent, painful event, it can be all consuming.

Don't push. I'd suggest that for now, you and your niece's parents try not to make a big deal out of her fear – and not push her too hard to be outside, especially at this time of year when the bees are so thick.

You can begin by acknowledging her feelings (for example, simply saying, "Yes, getting stung by that bee must have been really scary").

At the same time, it will be important for her to see you and others going calmly about your outside activities even when the bees are around.

Advice. Beyond that, there are some steps you can take that may help her become more comfortable being outside in the long run.

To help her actively master her fear, read together about bees and their behavior, with a focus on helping your niece understand as much as possible about how bees work, what attracts them and what

leads them to sting.

The more she knows about bees, the more she will understand that, despite her unfortunate experience, they're not out to get her.

It may well have been a yellow jacket or wasp, actually, that stung your niece, so try to find information about these insects, too.

Teach her steps she can take to protect herself from bees when she is outside. For example, teach her to avoid fragrances that attract bees and to leave the sweet food in the house so they won't try to come to her picnic.

Teach her to hold still if a bee comes near her, rather than startling it by swatting suddenly.

Time will help put her fear of bees in perspective. The stinging incident is very fresh in her mind right now, but it probably will fade with time.

As she matures, she will be better able to decide to take a calculated risk, knowing that the pleasures of playing outside outweigh the risk of another sting.

Getting help. Hopefully, her intense fear will subside. But if that is not the case, and her fear interferes with her ability to enjoy ordinary outdoor activities, you may want to seek help from a psychologist who specializes in desensitizing people who have overwhelming fears or phobias.

*Martha Erickson, Univ. of MN.
reprinted from Farm & Dairy*

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NZ FEELS THE PINCH

New Zealand honey producers are bitterly opposed to proposals that would deregulate their industry and end the import ban that has given them a virtual monopoly of the market.

The ban on imports has been in place to prevent the arrival of foreign diseases in imported honey or beehive products.

It has applied to all but a handful of Pacific Island countries.

But a recent Ministry of Agriculture risk management analysis

said the market could be opened to foreign competition and the industry's comparatively disease-free bee status adequately safeguarded.

The risk analysis said methods including heat treatment, freezing and irradiation methods would protect the industry.

Bee Industry Group chairman Milton Jackson said while the industry was bitterly opposed to the arrival of imports it was something that was inevitable.

CALL FOR PROPOSALS FROM SARE

The Northeast Region Sustainable Agriculture Research and Education (SARE) program, which funds research and education grants and professional development grants, is calling for preproposals for the next funding cycle. A preproposal is a brief, one-page summary of key project themes and results, and is part of the selection process. Only preproposals approved can go on to develop a full proposal.

Preproposals are submitted on

line, and applicants can look at the format requirements by going to www.usm.edu/~nesare and following the "grants and application information" link. You will find materials explaining the application process, SARE funding priorities, and a Performance Target Workbook, which all potential applicants for these grant programs are encouraged to download and read. The deadline for the online submission is May 31, 2005.

ECOSYSTEM CHANGES WILL WORSEN

A study released in March revealed approximately 60% of the ecosystem services that support life on Earth are being degraded or used unsustainably. Scientists warn harmful consequences of this degradation could grow significantly worse in the next 50 years.

Progress achieved in addressing the goals of poverty and hunger eradication, improved health, and environmental protection is unlikely to be sustained if most ecosystem services on which humanity relies continue to be degraded," said the Millennium Ecosystem Assessment Synthesis Report, conducted by 1,300 experts

from 95 countries. It states ongoing degradation of ecosystem services is a road block to Millennium Development Goals agreed to by world leaders in 2000.

Although incomplete, there is enough evidence for experts to warn that degradation of 15 of 24 ecosystem services examined is increasing likelihood of potential changes that will seriously affect human well-being. This includes emergence of new diseases, sudden changes in water quality, creation of "dead zones" along coasts, collapse of fisheries, and shifts in regional climate.

For more information www.millenniumassessment.org.

ORGANIC PRODUCERS & MARKETERS EXEMPTED FROM COMMODITY PROMOTION ASSESSMENTS

The U.S. Department of Agriculture's Agricultural Marketing Service announced in January two rules to exempt certain organic producers and marketers from paying assessments under research and promotion programs, and for market promotion activities under marketing order programs.

The change will exempt producers and marketers operating under a National Organic Program-approved organic system plan from paying assessments, provided they produce and market only commodities eligible for a "100 percent organic" label.

The 2002 Farm Bill directed USDA to issue regulations exempting any person who produces and markets solely 100 percent organic products from paying assessments under a commodity promotion law.

Currently, 17 national research and promotion programs exist — blueberries, beef, cotton, dairy, eggs, fluid milk, Hass avocados, honey, lamb, mangos, mushrooms, peanuts, popcorn, pork, potatoes, soybeans and watermelons. Eligible producers and marketers will be exempt from all assessments under these programs.

Under the marketing order programs, eligible producers and marketers will only be exempt from assessments for market promotion activities. The 28 marketing order programs that have market promotion authority are

California nectarines; California peaches and pears; Washington apricots; Washington sweet cherries; Washington/Oregon fresh prunes; Southeastern California grapes; Oregon/Washington winter pears; cranberries; tart cherries; Oregon/Washington Bartlett pears; California olives; Oregon/California potatoes; Colorado potatoes; Georgia Vidalia onions; Washington/Oregon Walla Walla onions; Idaho/Eastern Oregon onions; Texas onions; Florida tomatoes; Texas melons; California almonds; Oregon/Washington hazelnuts; California walnuts; Far West spearmint oil; California dates; California raisins; and California dried prunes.

Details of the exemptions, including application procedures, will be available in the "Rules" section of the Jan. 14 *Federal Register*. Eligible persons should contact their board, council or committee for additional information. The new *Final Rule to Exempt Organic Producers from Assessment by Research and Promotion Programs*, and related information is available at: <http://www.ams.usda.gov/2002farmbill/organicexempt>. The new *Final Rule to Exempt Organic Producers and Marketers from Assessments for Market Promotion Activities under Marketing Order Programs*, and related information is available at: <http://www.ams.usda.gov/fv/mocommodities/marketingorderorganicexemption.htm>.

WI HONEY QUEEN



The Wisconsin Honey Producers Association is proud to announce that Jolene Hoefs was selected as the 2005 Wisconsin Honey Queen at their convention in November. Jolene is the 21-year-old daughter of Jerry and Sue Hoefs of Neosho, Wisconsin. She is the granddaughter of Lucille Malay of Brown Deer, Wisconsin and the great-granddaughter of Adele Hoffman of Glendale, Wisconsin. She was a 2002 graduate of Hartford Union High School in Hartford. Jolene is currently a junior at the University of Wisconsin-Madison.

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Strachan Apiaries	41
Taber's Queens	20
Weaver, B. Apiaries	26
Weaver, R Apiaries	31
Wilbanks Apiaries	31

Associations/Education

American Beekeeping Federation	6
American Honey Producers	44
Apimondia Trip	42
EAS	2

Heartland Apicultural Society	15
-------------------------------------	----

Equipment

Beeline Apiaries	37
CC Pollen	6
Cowen Mfg.	26
Dakota Guinness	21
Golden Bee Beesuit	48
Humble Abodes	
Woodenware	13
MDA Splitter Nuc Boxes	48
Perma Comb	56
Pierco Frames	16
Vented Beehive Cover	21
Younger Smoker	56

Related Items

Angel Bottles	59
Bee Cool Hive Ventilators	5
Bee-O-Pac	9
Bee Quick	48
Bee Services	48
Branding Irons	47
Global Patties	60
Golden Heritage Foods	13
Hive Top Feeder	59
Hogg Halfcomb Cassettes	21
Honey B Healthy	16
Honey Straw Machine	56
Letters From The Hive, book ..	21

Mid-Tech Publishing	28
Mite-Away	26
Mite Gone	47
Observation Hive	59
R. M. Farms	56
Swarm Retriever	6
Tele-Fork	6
Tuttle Apiaries	16
Varroa Mite Board	56

Suppliers

B&B Honey Farm	1
BetterBee	Inside Front
Betterway Equipment	55
Brushy Mountain	59
Dadant	Inside Back
Draper's Super Bee	60
Honey Bee Container	47
Kelley, Walter	63
Mann Lake Supply	Bk Cover
Maxant Ind.	26
Mid-Con Agrimarketing	16
Miller Bee Supply	57
Queen Right Colonies	56
Root	4
Ross Rounds	47
Rossman Apiaries	41
Ruhl Bee Supply	59
Sherriff, B.J.	58
Simpson's Bee Supply	44

Back when we could only tune in three black and white television channels, I used to watch Saturday afternoon monster movies. This preceeded the special effects era. The huge dinosaur walking through the city looked like a pet iguana on steroids. The 50 foot tall spider resembled a tarantula. Space aliens looked like humans dressed in aluminum foil. Zombies and other undead creatures emerged from their tombs wrapped in tattered strips of gauze. As an imaginative seven-year-old who lived near a cemetery I didn't require high tech realism. I still have nightmares.

Something always perplexed me about those old monster movies. Every time the monster appeared, the good guys pulled out their six shooters and emptied them into the monster. It never worked. The giant tarantula kept on coming. The zombies never even slowed down. Even when they finally called in the Air Force, the bombs barely slowed the man in the gorilla suit. Something unexpected usually stopped those monsters. The dead aliens never meant to harm the humans. If a flying saucer landed in my back yard (I fervently hoped one would) I planned to move quietly toward them with outstretched arms, welcoming them to Earth. Sadly, I learned as a child that humans instinctively shoot first and think later, not just in monster movies, but in real life.

One afternoon, Marty, one of my regular customers, called me about a bee problem. Hundreds of bees lived underground in his yard. They appeared year after year, reaching their highest population level in late summer. Rather than a single entrance, tiny holes riddled the yard. When he mowed his lawn, right over the bees' nests, they swarmed out and buzzed angrily at him. He'd sprayed poisons over the area several times but couldn't kill them. He wanted them eradicated before one stung one of his children. Marty assured me they weren't yellow jackets.

I suspected Marty had underground yellow jacket nests in spite of his unusual description. Most non-bee people do not observe frightening phenomena accurately. I told him I'd be there within an hour to take care of them. I loaded up the van with protective gear, a spray bottle of soapy water and a shovel, figuring I'd empty my arsenal into the holes, throw the dead nest into a bucket and drive away with \$50.00 in my pocket.

They weren't yellow jackets. It turned out Marty was remarkably observant. They looked like tiny bumblebees – scarcely larger than house flies. Hundreds of holes pock marked the yard. As one flew out of her hole, I caught her in mid air. She had little pollen sacks on her hind legs.

"Gee, Marty, I wonder if you have a rare native bee that's on the endangered species list." I suggested. "Maybe we should call the Department of Environmental Conservation."

"We don't need to call nobody. I just want them gone," he replied. His kids ran their big wheel tricycles through the area, leaving a cloud of swirling, angry bees. I offered to see what I could find out, although the chance of charging Marty for killing his pests looked pretty slim.

You can get to a lot of interesting places from the *Bee Culture* website. I e-mailed Dr. Donald R. Lewis from Iowa State University. He suggested "digger bees" and included several useful web addresses for more information.

Digger bees build solitary nests only in certain highly specific sites. They appear to live in colonies, but do not have a social structure like honey bees, hornets, or yellow jackets. The females dig a tunnel. At the bottom they pack pollen into a chamber, lay an

egg, then seal it. The males hang out in the area looking for hot babes. Their life span is three to four weeks. Digger bees won't sting unless squeezed or trapped. Even when they do, the sting is insignificant. Males, like drone honey bees, can't sting. The websites listed many species of digger bees, but the descriptions were pretty vague, leaving the impression that we know very little about them.

I wish digger bees lived in my yard. They are cute. I would enjoy them and live side by side with them in perfect peace and harmony. Marty only wanted them to depart or die. Life isn't fair for either humans or digger bees.

I called Marty back and told him the digger bees posed virtually no threat to his kids. He could try plowing the area or covering it with gravel or plastic if he really wanted to eradicate them, but the best course of action was to leave them alone to live their life. Marty decided to go right out and cover the area with plastic as soon as he hung up. We fear what we don't understand.

Beekeepers aren't immune from the kill-the-monsters syndrome. We find mites. We fill our hives with chemicals in a futile attempt to destroy them. We shoot bears, trap skunks, scatter poison for the mice and feed antibiotics to control foulbrood, just in case.

Now, remembering those lessons from the monster movies, I carry two revolvers to the bee yard. I use one to eliminate any bears that might wander past. I keep the other in case of zombies or giant tarantulas, or for when I find mites in a colony. I just step back and empty the chamber right into the hive. It doesn't kill all the mites, but neither does Apistan, Coumophos, screened bottom boards, or formic acid. At least I've done something to remind myself I'm human.

Peter Sieling

Old Monster Movies

BOTTOM BOARD