

FEB 2006
Bee Culture

WWW.BEECULTURE.COM

Yellow Jacketology ... 24
Apimondia Exhibits ... 44
Drone Brood Removal Works ... 19
Fork To Farm (or Bee To Bagel) Food Safety Audit ... 35



\$4.99

7 35048 28163 9



Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

FEBRUARY 2006 VOLUME 134 NUMBER 2

FEATURES

MANAGE VARROA - REMOVE DRONE BROOD 19

This technique works. Reduce chemicals, save money, and bees.

Nick Calderone

YELLOW JACKETOLOGY 101 24

Wasps are diverse, fascinating and important. But don't take them for granted for even a second.

Charles Martin Simon

LAURENCE CUTTS 32

Recently retired Florida Inspector, beekeeper, and story teller.

Jennifer Berry

FARM TO FORK 35

It is reasonable to expect that in the future the requirements for beekeeping will parallel other sectors of food production and safety.

Eric Wenger

OVERCOMING FEAR 37

You can eradicate the ignorance which ultimately leads to wrongful judgments, irrational fears and extreme prejudice.

Linnet McLaughlin

JEWELS FOR THE QUEEN 42

A new ruby hook comes online.

Sue Cobey

PICTURES FROM AN EXHIBITION 44

Vendors - Apimondia 2005.

Kim Flottum

BEEHAVER BOGGLER - SWARM CONTROL 48

Follow our beekeeper on his journey to beekeeper.

Morris Ostrofsky

When you see a worker bee in your colony with wing deformities like this your colony, and thus you, have a serious problem. Virus induced, this deformity points to a severe infestation of Varroa, and often, even heroic efforts to save the colony by applying miticidal compounds are too little, too late. Preventing Varroa buildup, monitoring Varroa populations, and applying non-chemical Varroa management tools go a long way in preventing build-up, and the resulting colony crash.

Drone brood removal is an effective method of non-chemical Varroa control, as outlined by Nick Calderone on page 19.

800.289.7668 • www.BeeCulture.com

Publisher - John Root

Editor - Kim Flottum, Ext. 3214, Kim@BeeCulture.com

Production Coordinator - Kathy Summers, Ext. 3215, Kathy@BeeCulture.com

Circulation & Advertising - Dawn Feagan, Ext. 3220, Dawn@BeeCulture.com

Publication Assistant - Sharon Garceau, Ext. 3255, Sharon@BeeCulture.com

Contributors

Clarence Collison • James E. Tew • Ann Harman

Malcolm T. Sanford • Steve Sheppard

Larry Connor • Connie Krochmal

Subscription Information

U.S., one year, \$23.50; two years, \$44. Newsstand price: \$4.99. 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), February 2006, Volume 134, Issue 2, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Contact Information

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

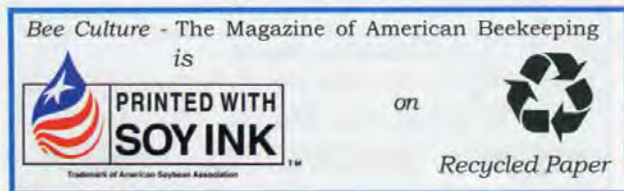
Advertising

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

POSTMASTER: Send address changes to BEE CULTURE, The A.I. Root 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.

Published by The A.I. Root Co. Copyright© 2006 by The A.I. Root Co. All rights reserved.



DEPARTMENTS & COLUMNS

MAILBOX	7
THE INNER COVER	10
<i>Two decades.</i>	Kim Flottum
HONEY MARKET REPORT	13
<i>Retail honey containers.</i>	
RESEARCH REVIEWED	15
<i>The Tien Shan Mountain Bee – eastward ho!</i>	Steve Sheppard
BEEKEEPING SNAPSHOTS	29
<i>Just for the moment.</i>	James E. Tew
SMALL SCALE QUEEN REARING	38
<i>Non-grafting methods of queen rearing.</i>	Larry Connor
HONEY PLANTS	50
<i>A multitude of invasive thistles.</i>	Connie Krochmal
CHORES	53
<i>Lots to do during this very short month.</i>	Ann Harman
DO YOU KNOW?	55
<i>What do you know about honey, honey production and floral sources?</i>	Clarence Collison
GLEANINGS	57
<i>All the news that fits.</i>	
CLASSIFIED ADS	61
<i>Buying and selling.</i>	

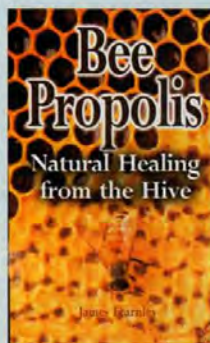
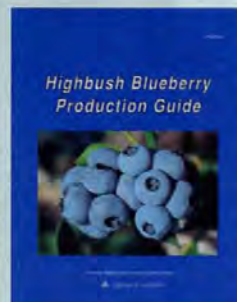
Spring Time Tasks



X127 Honey Bee Law
Written by Sylvia Ezenwa. How do state and federal laws regulate beekeeping? How do you write a pollination contract? Every beekeeper should have this book. Soft cover, 144 pages. **\$25.00**

X149 Highbush Blueberry Production Guide

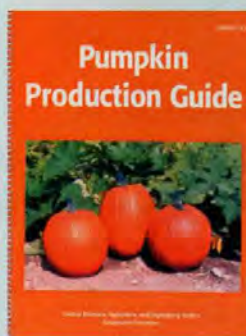
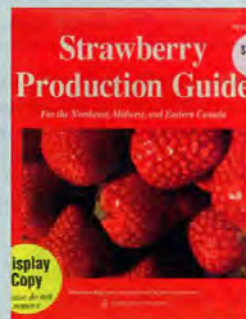
Intended to aid the potential and established commercial grower in all aspects of blueberry production and pollination. Three-ring binder, 200 pages, full color. **\$50.00**



X153 Bee Propolis, Natural Healing
James Fearnley explains how to use propolis as part of everyday care, with advice on preparation and dosages, details on suppliers. **\$15.00**

X151 Strawberry Production Guide

Intended as a comprehensive resource for strawberry growers in northeastern North America. Pollination included. Three-ring binder, 162 pages. Full color. **\$48.50**



X119 Pumpkin Production Guide
Many pumpkin growers still consider this crop marginal, and neglect many of the basics of producing good fruit. Pollination is often one of those basics. Provided by Coop Extension, Ithaca. Soft cover, spiral bound, color with 152 pages, 8" x 11". **\$42.50**

Prices include shipping in the U.S. For foreign postage please contact *Bee Culture Magazine*.

Root Publications (a division of The Root Candle Co.)

623 W. Liberty St., Medina, Ohio 44256



800.289.7668



Reflections . . .

In the October issue of *Bee Culture* on page 22, by Carl W. Sypolt, middle column - I quote "The little lady utilized the top of my left ear as a landing pad. There without provocation . . .

That happened to me exactly as depicted by Mr. Sypolt, last year around November. I can't recall seeing halos but that stinging episode sent me to the emergency room of the local hospital for a revival. My symptoms were a strange prickly like feeling throughout my body and difficulty breathing. The hospital staff attending did not mention anything about a nerve being on top of the ear able to affect vision, throat, etc.

That stinging incident was the first time I had ever been affected by any insect sting and I have been stung numerous times in my life by numerous stingers, honey bees included, without severe reactions. I was not involved with bees at the time but I was thinking about the hobby. I followed through with the beekeeping plan and now have four hives, numerous stings, all over, with no adverse reactions.

Next time I'll consult the Paramedics and by-pass the Doctor.

I enjoy your *Bee Culture*.

Richard Parr
Lockport, LA

Chopping Blocks

Regarding Tom Seeley's article in the December issue on Plastic Foundation and Dance Communications I read a study in the 90s on chopping blocks. They found that wooden chopping blocks (cutting boards) hindered bacteria growth whereas plastic let bacteria grow. I have wondered how this chopping block research on bacteria growth translates into beehive foundation. As a result of this chopping block study, I only use crimped wired beeswax foundation over the plastic foundation. However, I have not seen a bacteria study done on beeswax foundation compared to plastic foundation. I suspect the bees use of beeswax will retard bacteria

Editor, 623 W. Liberty St.,
Medina, OH 44256
KIM@BEECULTURE.COM



Comments
Suggestions
Criticisms
Kudos, and
anything else

growth but I have not seen it proved. This is the last major issue with me using plastic foundation over possibly thermal heat transfer thru plastic in the cluster during Winter.

David MacFawn
Lexington, SC

2006 BC Calendar -

I'd like to let you know what a great idea the calendar was. I think it's perfect for the beekeeper and advertisers. A pull-out to hang up for the entire year with helpful hints on beekeeping and monthly marketing tips. To have subscribers submit photos for publication is an excellent incentive. What a great idea! I hope this is a yearly project.

I feel honored to have one of my photos chosen for the month of October and would like to compliment all of the other beekeepers/photographers who also got published. There's a lot of excellent photography out there.

Bill Mondjack
Whitehall, PA

When I received my latest copy of *Bee Culture* in the mail I was at first delighted to find the 2006 Beekeeping Calendar. I say "at first" because when I opened it up I was disappointed to see that you gave 1/3 of the top page over to advertising, spoiling the otherwise beautiful pictures. You really should have let the top page be just a picture, and kept the advertising on the bottom page. What a good

gesture (and advertising for you) that would have been.

Mark Springston
Frederick, MD

Bee Culture for December just arrived and as normal I will enjoy it from cover to cover as I have for at least 25 years.

The calendar is a great idea. As soon as my son saw it he said, "I know where that's going. Beside Dad's chair."

Thanks.

Robert Frey
Monmouth, IL

Dec. Almond Conference

This was a good meeting. Wednesday afternoon was devoted to bees and almond pollination. Tucson was well represented. Gloria DeGrandiHoffman said 2 heptanone looks extremely promising but that the delivery system needs refining to allow slow-release ala "old" strips (also said at bee meetings, and to be repeated at Jan. meetings). Gloria gave no time-table as to when it would be available commercially.

The general session on pollination was attended by about 200 growers and 15 beekeepers. Projected acreage figures are about 800,000 in 2010 (vs. 730,000 estimate a few months ago). The problems and significant losses beekeepers are having with *Varroa* were outlined. Lyle Johnston assured growers that beekeepers weren't getting rich even though pollination prices have doubled; that more beekeepers were trying to get out of the business than get in. Lyle's comments invoked the biggest applause of the entire 2-day meeting (and this from growers).

Self-fruitful almond varieties developed by U.C. were discussed



and these varieties appear closer to being a reality that ever before (although few of the 800,000 projected acres will likely include same). Self-fruitful varieties will still require bees but at much less numbers per acre.

Insurance companies are insisting that growers use at least two colonies per acre if they want their insurance to provide full coverage (if fewer are used, payments for losses will be discounted accordingly). No mention was made about strength of colonies or that a grower using one strong colony. Stories were told of growers ordering near-empty bee boxes just to qualify for insurance. (this insurance discussion was hallway discussion and not part of the meeting).

Small-hive beetle was discussed. CA is currently doing a survey and shb has been found in four counties (scuttlebut indicates more than four) and apparently can survive very well in CA. Contact CDFA at 916.653.1440 to see if shb quarantines will be eliminated (if shb is widespread).

Joe Traynor
Modesto, CA

Editor's Note: Joe Traynor is a Polination Specialist, and broker, and contributes frequently to these pages.

**WORLD'S LARGEST
CANDLE MAKING
SUPPLY COMPANY**



Pourette
NEW
BEESWAX MOLDS

Sell your beeswax in unique hexagon shapes using these molds.

You Can Make Candles
For Fun and Profit.
Send For Catalog . . . \$3.00

Pourette Manufacturing Co.
P.O. Box 70469
Seattle, WA 98107
(800) 888-9425

BEEKEEPERS PROTECTIVE CLOTHING
SHERRIFF

est  1968



ref: S36
Apiarist

ref: S36
colour:
Khaki

**The Proven Protection
since 1968**

The ORIGINAL

FREE
Catalogue

"My bee suit has lasted me over 27 years and is still going strong. Its certainly true about your suits being made to last! I need my wife to help me these days and I want her to be as well protected as I've been over the years ..."
Larry from California

B J SHERRIFF ~ Made in England
Manufacturer of Fine Beesuits for Optimum Performance

Carclew Rd . Mylor . Falmouth . Cornwall . TR11 5UN . England
enquiries@bjsherriff.com beesuits.com

tel : + 44 1872 863304 fax: + 44 1872 865267

Principle Stockist USA
Mid-Con . tel: 913 - 768 - 8967 tel: 1 - 800 - 547 - 1392



INNER COVER

Twenty years ago this month my Dad died, just a couple of weeks before I started here. He never saw a copy of this magazine. He didn't know the history this company is steeped in, and writing for a living seemed a stretch to him. And he didn't get to see what it was I finally was when I grew up.

I wish you could have met my Dad. He was a pretty special guy. One of the "Greatest Generation" recently written about, he was a first generation American. His dad came to Wisconsin from Norway, and after a time working as a logger, sent for his wife and their family began.

Born in 1911, my Dad was next to the youngest in a family of 11, raised in a tiny house in a small town in north central Wisconsin. His dad lumbered until the trees gave out, then he made thin-wood berry boxes until he gave out, and ended up a janitor in the local school system. When he was too old, his children helped with the heavy work nights and weekends when they could. That's something that would never be allowed today, I'm sure.

Dad, during the early 30s spent time in the Civilian Conservation Corps since there wasn't anything resembling work in lumbered-out Wisconsin during the depression. After a few years of learning a variety of skills there, he worked with his brother in 'The Company Store', a holdover from the lumber mill days, but now an independent operation. Groceries, dry goods, tools...they sold anything anybody could want there, and the seeds of retail became firmly planted.

While working there he and a close friend met two beautiful and gifted young ladies from a nearby town, and they spent nights and weekends negotiating corduroy back roads, winter storms, summer floods and ferocious fathers to make their weekend visits. Love bloomed, and a life together was discussed, debated and dreamed of.

Pearl Harbor changed all that. Dad immediately volunteered, married, and soon headed out to training camps in Illinois and Texas. Mom followed – and legendary stories of cockroaches as large as cocker spaniels, and scorpions in your shoes have been handed down for more than 60 years. When Dad shipped out to the Pacific theatre, Mom went back to Wisconsin to work as a bookkeeper and secretary...and to wait. Meanwhile, Dad went from Pacific island to island and finally to Japan, serving as a Med-Tech. He saw the very worst that war can do to young and fragile human bodies. That time was never a topic for discussion, all the rest of his life.

He returned unscathed, with retail still a goal, and together, he and his wife bought a small grocery store in a nearby town. A business begins, with as he put it, Dad as labor, and Mom as Management.

From his days in the Company Store, the CCC and the Army, plus living his early life in a large and not-rich family, he had learned many lessons about family, community and business, but the overriding lesson, his guiding light if you will, was always 'Take care of the people who take care of you'.

This was a farming community we lived in. Pretty much every-

thing depended on those folks on the farms just outside of town – from the bank, the hardware store, the blacksmith, to the grocery stores. Without the farmers our town would not have existed. It started as a lumber town with good rail connections, but when that dried up the access to good freight made it easy to be a farm center, and it flourished.

Two grocery stores in town. One, from the dark side was always cold, cash only, no credit, no mercy, no nonsense. Period.

Dad's was the other side. He worked with his customers. A bad crop? We'll carry you for a bit. Sick kid? You can pay when it works. Laid off from the creamery? You'll find something and can pay us then. Barter some fresh garden vegetables or home-raised eggs for the week's groceries? Excellent. Sure, I've got some work around here for a bit, just to trade for some lunch meat and bread, right? Why don't you kids take these new samples home to your mom? Let us know if you like them, OK?

At Christmas the town's ministers, the invalids, old people with no family, families with lots of kids and not a lot of money, and those who'd had a bad year for what ever reason – all found a bag of groceries on the front porch. Not fancy, but nutritious, and no questions asked, and nothing expected in return. It's what you did if you'd been blessed with a good year, and others hadn't.

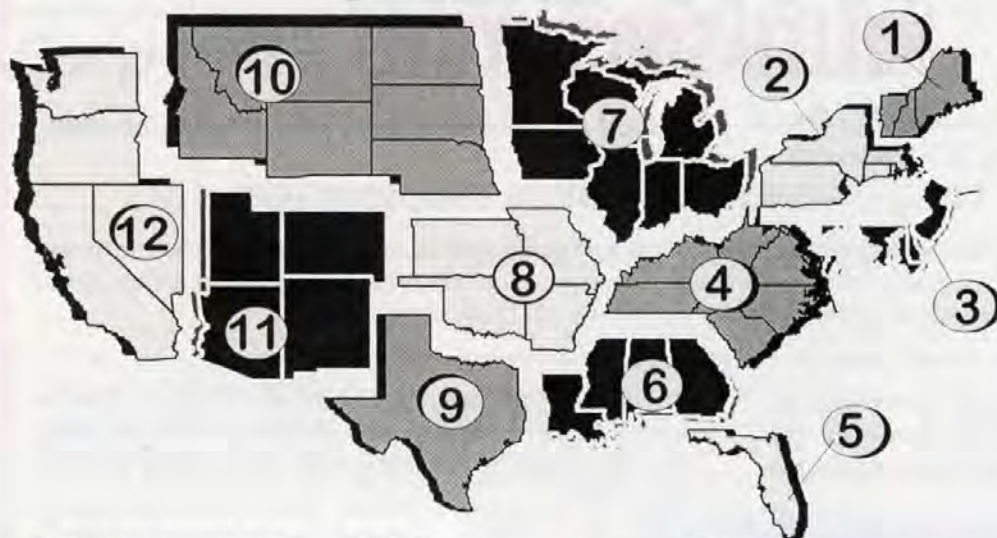
The community, too, benefited. Lions club meetings – 20 years without missing a meeting (his award sits on my book shelf yet). Supplying and delivering their food stand food at the fair at cost, for years and years. It's what you did. Volunteering time to refurbish the city park, the local beach, the town's ice skating rink, every year, no questions asked. It's what they did then. Take care of the community that takes care of you.

And customers. He taught all of his children that age-old axiom – the Customer is always right, no matter how wrong, no matter what it costs, no matter how much pride you have to swal-

Continued on Page 58

Two Decades; Funny Honey

FEBRUARY - REGIONAL HONEY PRICE REPORT



We asked our reporters to rank their retail-sized containers by sales using glass, or plastic, as the first criteria. Then, of these, which type (glass or plastic) sold best, and worst, and what was the size of the best, and worst selling containers. Interesting results . . .

Region 1

Glass over plastic 5:1 in sales. 1 lb. glass largest seller, and 12 oz. and 8 oz. plastic slowest.

Region 2

Tied, glass and plastic in sales. 1 lb. and pint best glass sellers. 12 oz. plastic slowest.

Region 3

Glass all the way, but some plastic in larger stores. 1 lb. glass the best seller, while the quart and pint glass the slowest.

Region 4

Tied. Both strong here. Pint and quart glass strongest by far. 12 oz. and 8 oz. plastic the slowest movers.

Region 5

Plastic most favored here, by a hair, but 1 lb. and 2 lb. glass best sellers, go figure. 8 oz. and 5 lb. glass slowest.

Region 6

Glass most favored, and in pints and quarts. 12 oz. plastic slowest seller, but 4 lb. glass close.

Region 7

Tied. Quarts and pints are glass, but 12 oz. plastic and 1 lb. plastic strong too. 8 oz., 1 lb. and 2 lb. glass slowest.

Region 8

Plastic, but glass close. 1 lb. plastic, and quarts do well, and 12 oz. plastic doesn't, according to reporters.

Region 9

Glass by a Texas mile and its pints, quarts and gallons. 8, 12 oz. and 1 lb. plastic struggle.

Region 10

Tied, but plastic in 1, 5 lb. and 12 oz. do well, while pints and quarts don't.

Region 11

Tied, but quarts in glass, and 8 and 12 oz. plastic do well, while 1 and 2 lb. plastic don't.

Region 12

Plastic by a hair. 1 lb. plastic, and quarts do well, but 12 oz. plastic doesn't.

	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	1.15	0.95	1.15	1.15	1.10	0.85	0.89	0.90	1.15	1.27	1.00	1.09	0.85-1.27	1.05	0.95	1.09
55 gal. Amber	0.98	0.85	1.00	1.18	0.65	0.65	0.78	0.98	0.72	0.98	1.05	0.91	0.65-1.18	0.90	0.83	0.96
60# Light (retail)	100.00	114.93	103.59	99.60	98.50	105.00	91.18	92.50	119.00	103.59	131.00	96.67	60.00-131.00	104.63	103.08	110.25
60# Amber (retail)	98.50	107.87	101.82	98.50	92.00	95.90	85.00	107.50	112.00	101.82	115.00	89.00	85.00-115.00	100.41	97.24	100.03
Wholesale - Case Lots																
1/2# 24's	40.72	50.18	43.79	37.98	51.50	32.50	42.04	43.79	43.79	35.76	31.00	42.48	31.00-51.50	41.29	46.83	40.42
1# 24's	59.70	57.72	65.40	57.00	54.24	56.00	65.07	62.53	55.50	77.76	75.00	70.40	54.24-77.76	63.03	60.83	59.57
2# 12's	60.34	57.09	65.15	52.45	60.12	52.00	60.05	59.50	45.20	57.84	42.00	60.96	42.00-65.15	56.06	55.27	52.71
12 oz. Plas. 24's	58.48	58.18	62.52	57.63	52.44	48.00	60.13	49.25	47.75	47.64	60.80	55.44	47.64-62.52	54.86	52.40	50.95
5# 6's	57.34	64.19	65.35	58.08	65.35	63.00	63.55	50.00	55.80	56.43	49.15	65.25	49.15-65.35	59.46	61.13	57.61
Quarts 12's	63.75	110.18	79.21	82.75	74.82	80.00	87.33	76.70	84.00	110.88	83.40	88.38	63.75-110.88	85.12	78.82	82.64
Pints 12's	62.00	54.98	58.54	59.67	42.30	51.75	51.18	42.57	54.00	49.50	49.00	53.94	42.30-62.00	52.45	48.14	49.12
Retail Honey Prices																
1/2#	2.40	2.64	2.66	2.25	1.89	2.79	2.50	1.85	1.99	2.44	2.00	2.80	1.85-2.80	2.35	2.73	2.37
12 oz. Plastic	3.35	3.14	3.39	3.36	3.02	3.50	2.98	3.21	3.35	2.85	3.14	3.32	2.85-3.50	3.22	3.10	3.12
1 lb. Glass	3.74	3.94	3.93	4.18	3.54	3.62	3.64	3.93	3.80	3.68	3.63	3.95	3.54-4.18	3.80	3.64	3.85
2 lb. Glass	6.98	6.46	6.64	6.15	6.16	6.99	6.21	7.25	6.00	6.12	6.22	7.14	6.00-7.25	6.53	6.59	6.76
Pint	5.25	6.20	6.57	6.03	5.37	5.25	5.55	5.24	5.20	6.50	5.58	6.26	5.20-6.57	5.75	5.86	5.54
Quart	8.25	10.37	10.58	8.54	10.28	8.48	9.12	8.82	8.90	10.35	9.07	9.49	8.25-10.58	9.35	9.16	9.14
5 lb. Glass	13.02	13.51	13.56	13.67	13.56	13.50	13.29	14.00	13.85	13.24	12.15	13.99	12.15-14.00	13.45	13.34	14.31
1# Cream	5.13	5.37	6.25	4.51	4.40	4.00	4.74	4.25	5.00	5.13	4.54	4.23	4.00-6.25	4.80	5.32	4.61
1# Comb	5.33	4.73	6.47	5.40	6.40	6.19	5.90	4.99	6.47	6.00	8.25	5.86	4.73-8.25	6.00	5.52	5.01
Ross Round	5.50	3.90	4.94	5.15	4.00	3.29	4.99	5.00	4.94	5.50	5.50	4.49	3.29-5.50	4.77	4.91	4.92
Wax (Light)	2.45	2.69	1.40	2.16	1.58	2.05	2.27	2.25	2.10	2.20	1.43	2.45	1.40-2.69	2.09	2.20	2.47
Wax (Dark)	1.65	2.11	1.30	1.25	1.20	2.03	2.42	2.00	2.15	1.50	1.70	2.18	1.20-2.42	1.79	1.77	1.98
Poll. Fee/Col.	45.00	63.50	40.00	34.00	42.50	45.00	45.50	60.00	77.50	78.76	28.00	108.33	28.00-108.33	55.67	63.33	48.93

RESEARCH REVIEWED

Explaining • Defining • Using

Steve Sheppard

"The wild honey bees of the Tien Shan belonged to a previously undescribed subspecies."

The honey bee used in the United States hails from an ancestral home in the Old World, just as do most of the beekeepers. Although humans eventually introduced *Apis mellifera* to every continent on the planet except Antarctica, the original range was believed to be limited to Africa, Europe and western Asia. Historical patterns of ice age glaciation and climate and vegetation change, together with natural barriers to movement such as water and mountain ranges have been implicated in the formation of "geographic races" or subspecies

within the honey bee. Members of a subspecies share recent genetic ancestry (relative to non-members) and typically express behavioral and physical adaptations to their area

of origin. Thus, honey bees originating from the northern forests of Europe behave (and look) quite differently than honey bees native to the savannas of Africa or to the east coast of the Mediterranean Sea.

Subspecies are given a formal scientific designation "below" the species level, specifically a third name that follows the "binomial" genus and species name. Beekeepers are familiar with some Old World subspecies by their common names, including the Italian honey bee (tri-

nomial *Apis mellifera ligustica*), the Carniolan honey bee (*Apis mellifera carnica*) and the Caucasian honey bee (*Apis mellifera caucasica*). In his comprehensive works on the classification and worldwide distribution of honey bees, Ruttner (1988, 1992) provided range maps and descriptions for around two dozen subspecies. Ruttner reported that the eastern limits for the natural distribution of *Apis mellifera* were the Ural Mountains in the north and the central desert of Afghanistan in the south.

This month, I am going to do something a little different in the column by providing an account of how a particular research idea came about, how the work was conducted and possible directions for the future. This story began with an initial research trip to central Asia to collect both pestiferous and beneficial apple insects in and around the Tien Shan Mountains of central Asia. These mountains are well known for their wild apple forests and, as the center of origin for apples, are often visited by geneticists and breeders looking for new apple germplasm and by entomologists looking for parasites and predators that might be used to control apple pests.

My initial interest in looking at honey bees from this part of the world came from both a curiosity about the proximity of the natural ranges of *A. mellifera* and *A. cerana* (the Eastern honey bee - aka the original host for the mite *Varroa destructor*) and the possibility that honey bees adapted to wild apples had genetic characteristics that could be useful for the beekeeping/apple pollination industry. In the Pacific Northwest, one concern of growers is that apple pollination

during particularly cold springs (currently conducted with bees of Italian ancestry) may be less than ideal. It seemed reasonable to look more carefully at the pollinators of the wild apple forests of the Tien Shan Mountain range. Little had been written in English about the honey bees of this region and it was generally reported that the honey bees of central Asia derived primarily from managed beekeeping and bees introduced from the west (Europe) during the period of the Soviet Union.

My first opportunity to travel to this region was in collaboration with a USDA colleague, Dr. Tom Unruh, who had scheduled a trip to Uzbekistan, Kyrgyzstan and Kazakhstan to evaluate possible beneficial insects for the control of apple pests. I was able to join his expedition and we spent about a month collecting extensively in apple orchards, beekeeping cooperatives and, finally, in more remote mountainous areas of Kazakhstan and Uzbekistan. The primary outcome from most of the regions we visited was to confirm that beekeeping as practiced with moveable frame hives and in agricultural regions derived from technology and genetic stocks of bees that had been introduced from European origins. The typical hive in use was a "Russian" chest type hive much like those still used in parts of western and eastern Europe. However, near the end of the first trip, we also found and collected bees in the Tien Shan Mountains of Kazakhstan. One of the first colonies sampled was a feral colony located in a Juniper tree within a wilderness area. Local beekeepers in this western Tien Shan region reported that the bees were widespread in the moun-





The typical hive in use was a "Russian" chest type hive much like those still used in parts of western and eastern Europe.

tains and that they were better able to survive cold Winters than the European stocks that had been introduced during Soviet times. Some of the beekeepers had been catching swarms from the mountain areas for decades. Armed with this information, we also traveled to eastern Kazakhstan and collected bees from locations several hundred miles further east within the Tien Shan Mountains.

The subsequent analysis of the samples included standard methods used for subspecific classification (factor and discriminant analysis of morphology) and characterization of mitochondrial DNA. Included for comparison in the study were samples from the neighboring subspecies to the west and from the European subspecies that had been

introduced during Soviet times. The analysis demonstrated that the wild honey bees of the Tien Shan belonged to a previously undescribed honey bee subspecies and further, that it was part of a larger morphological lineage of honey bees that included the Caucasian honey bee. The new subspecies was named *Apis mellifera pomonella* and the distribution, as initially described, expanded the known natural range of the honey bee eastward by more than 2000km (Sheppard and Meixner, 2003). The name *pomonella* derives from the Roman deity Pomona, protector of gardens and fruit trees. This subspecies is a rather large, dark bee, with a calm behavior on the combs typical for temperate mountain honey bees). The results of the DNA analysis also showed

that *A. m. pomonella* was related to other subspecies from the eastern portion of the honey bee range. Analyses of additional honey bee samples collected from Kazakhstan and Kyrgyzstan on subsequent expeditions have shown that this subspecies is widely distributed within the Tien Shan Mountains. As the Tien Shan Mountains extend into western China, there is a good chance that *A. m. pomonella* also occurs there.

Now that we have a description and some notion of the range of this subspecies, questions that remain include its suitability as a pollinator of domesticated apples, its expression of traits of apicultural importance (including behavior, productivity, hardiness) and its status as a host for pathogens and parasites. Whether *A. m. pomonella* becomes a realistic candidate for importation and quarantine efforts by the USDA likely will depend on interest expressed by potential users of these bees, such as beekeepers involved in tree fruit pollination and non-migratory beekeepers from areas with cold severe Winters, and from tree fruit growers themselves. The ability to make use of genetic resources that exist within Old World honey bee populations has been demonstrated in recent years by the effort of USDA scientists and cooperators to provide beekeepers with stocks of honey bees originating from populations sampled from far eastern Russia. The genetic diversity found in the honey bee across its range from central Asia to Europe and Africa is a fascinating matter unto itself and one that continues to be studied intensely by those interested in the evolutionary history of the species. **BC**

A.m. pomonella is a rather large, dark bee, with a calm behavior on the combs typical for temperate mountain honey bees.



Dr. W. Steve Sheppard, Thurber Chair, Department of Entomology, WA State University, Pullman, WA 99164-6382, shepp@mail.wsu.edu; www.apis.wsu.edu.

Sheppard, W.S. and M. D. Meixner. 2003. *Apis mellifera pomonella*, a new honey bee subspecies from Central Asia. *Apidologie*. 34:367-375.
 Ruttner, F. 1988. *Biogeography and taxonomy of honey bees*. Springer. Heidelberg, New York.
 Ruttner, F. 1992. *Naturgeschichte der Honigbienen*. Ehrenwirth, Munich.

MANAGE VARROA – REMOVE DRONE BROOD

Nick Calderone



February in the North Country always raises concerns about Winter losses; and once again, we are hoping that Winter will not be too harsh on our bees. Of course, successful wintering depends on many things, two of the more important being the strength and health of a colony's worker population in the Fall. In Ithaca, NY we like to see healthy bees boiling out of two deeps or bearded up on the fronts of the hives after removing the crop at the end of the goldenrod flow. One of the biggest obstacles to the maintenance of strong, healthy colonies is the parasitic mite *V. destructor*.

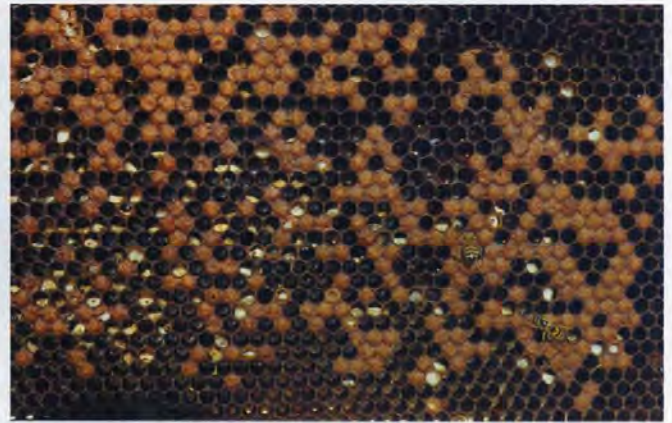
Mite damage can occur for several reasons, including pesticide resistance in the mite population, heavy re-infestation pressure from nearby colonies, failure to monitor mite levels, and failure to treat often enough or at the right time. When mite populations rise to dangerous levels, a number of symptoms become apparent. These include deformed wings, deteriorating brood, bees crawling at the entrance, unable to fly and declining worker populations. These symptoms, collectively designated parasitic mite syndrome (Shimanuki et al. 1994; Fig. 2a, 2b), are largely the result of elevated virus levels associated with *V. destructor*. Unfortunately, by the time you see them, your colonies have already been damaged, and their ability to survive the Winter may be compromised.

One of the most important tools in the fight against *V. destructor* is *scheduled maintenance* in the form of

regular colony inspections for signs of parasitic mite syndrome and regular monitoring of mite levels. Whenever you observe a colony with high mite levels or with any evidence of parasitic mite syndrome, you should remove all marketable honey and apply an effective miticide. If this occurs in mid-Summer, the colony has time to recover because it can still produce several generations of healthy workers in a low-mite environment before going into Winter. However, in the north, these symptoms often occur during or just prior to the Fall flow, a time when most beekeepers are reluctant to treat, as that means contaminating the fall crop. As a result, affected colonies often die during the Fall flow or shortly thereafter, even if an effective miticide is eventually applied. Some colonies with less serious damage may persist through the Winter, only to emerge the following spring as grossly sub-standard units.

So, while monitoring can play an important role in limiting mite damage, you should also consider adopting preventative management practices that keep mite levels low throughout the Summer and early Fall. That way, you don't have to worry about colonies collapsing in the Fall or dying over the Winter. Drone brood removal is one method that will dramatically suppress the growth of the mite population during the brood-rearing season and ensure that you have strong, healthy colonies going into Winter.

Biological basis Drone brood removal is based on three aspects of the mite's biology. First, mites



Varroa destructor on worker bee (l), and symptoms of parasitic mite syndrome typical with high levels of V. destructor, showing deteriorating brood.

spend most of their time in capped brood cells. Second, they can be found five to 12 times as often in cells with drone brood as in those with worker brood. Third, mites using worker brood as a host average 1.3 – 1.4 offspring, while those using drone brood average 2.2 – 2.6 offspring. So, by removing capped drone brood from an infected colony, you remove a disproportionately large number of mites without affecting the worker population, and you remove those mites with the highest fecundity. As a result, you suppress the growth of the mite population during the brood rearing season.

In Europe, where drone brood removal has been used for many years, the practice typically involves the construction of special combs, the destruction of drone brood with the requirement that colonies build replacement drone comb, and short replacement intervals. Other methods combine drone brood removal with labor intensive techniques such as a heat treatment, swarm control measures, or a short broodless period created by temporarily caging the queen. While effective, the extra time required to implement these methods has limited their widespread adoption by beekeepers in the U.S., although some positive findings have been reported in U.S. bee journals. Recently, I conducted a study to determine if a simple implementation of the drone brood removal method using commonly available equipment would maintain mite populations at low levels until the end of the Fall flow and

the beginning of a legal treatment window. Here is how I did it.

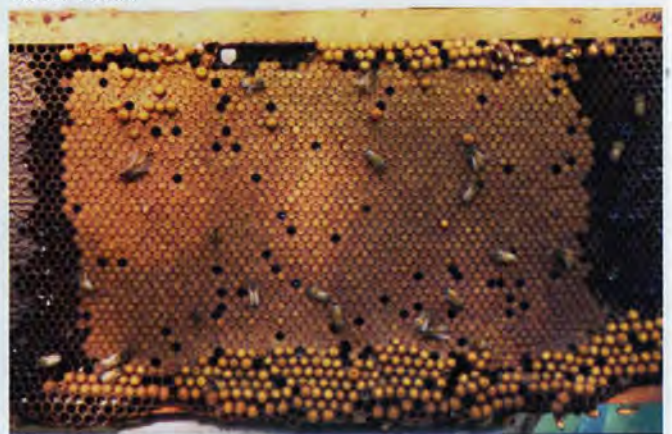
Experimental Experimental colonies (n = 42) were treated with CheckMite+ in the fall of 2002. The following spring, quantities of bees and brood were equalized, **but colonies were not retreated.** The brood nest of each colony consisted of 18 full-depth worker combs and two full-depth drone combs housed in two, 10-frame hive bodies. Each worker comb had ≤ 2.0 in² of drone cells. Drone combs were kept two or three combs in from either side of the upper brood chamber. Standard management practices were used throughout the season, including the addition of honey supers above a queen excluder. Colonies were randomly assigned to one of three apiaries, and within each apiary, to one of two groups: control or treatment. In the control groups, drone combs remained in place throughout the season. In the treatment groups, drone combs were removed on 16 June, 16 July, 16 August and 16 September and replaced with empty drone combs (16 June) or with drone combs removed on the previous replacement date. Combs were kept in a freezer when not in a colony.

Results An average of over 7,000 cells of capped drone brood was removed from each treatment colony over the course of the Summer. On 7 October, 2003 the average mite-to-bee ratio in the control group was 0.109 ± 0.017 (lsmean \pm SE), compared to 0.025 ± 0.016

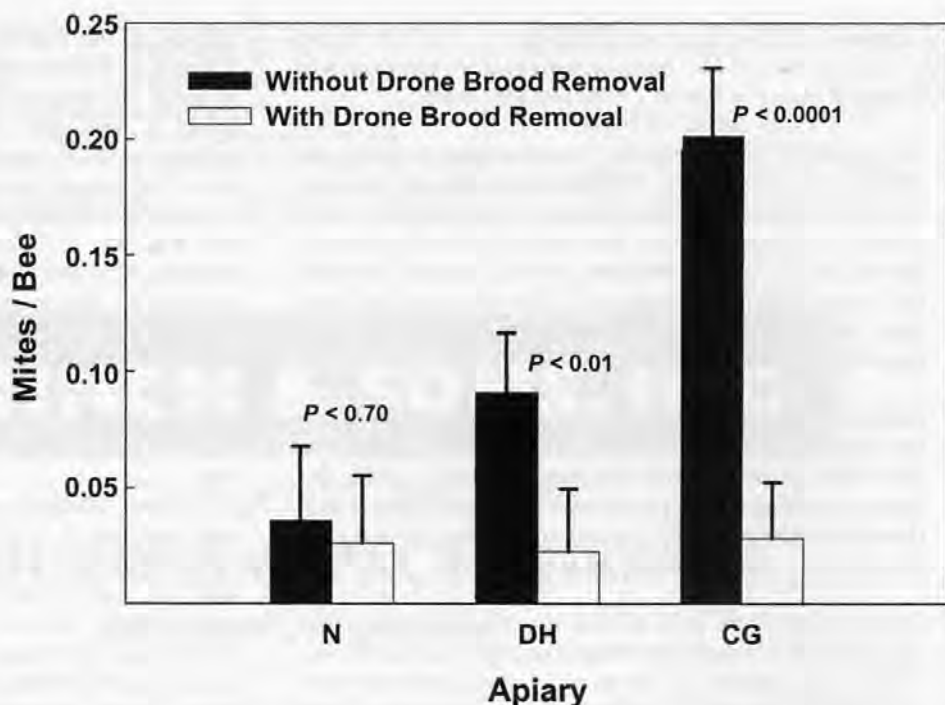
Comb of capped drone brood being removed from colony.



Worker comb with excessive drone brood along the bottom. This comb should be removed from the colony and replaced with a better comb.



Mite-to-bee ratios on October 7, in colonies with and without drone brood removal in three apiaries. Ratios were significantly different ($P < 0.001$) in the DH and CG apiaries.



in the treatment group, about a five-fold difference. However, the differences varied among apiaries. In two of the three apiaries, differences were highly significant ($P < 0.0001$), being about five-fold in one and 10-fold in the other. In the third apiary, mite populations were low in both the treatment and control groups. The reason for the low levels in the control colonies in that yard are not known, but presumably reflect environmental effects on population growth rates.

Overall, mite-to-bee ratios in the control colonies ranged from 0.012 to 0.441; but only from 0.000 to 0.070 in the treatment colonies. Strange and Sheppard (2001) reported that colonies with an early October ratio < 0.01 (that's ≤ 2 mites on a 300-bee ether roll) did not require a fall treatment. Their study was done in the northwest, near the WA-ID border, where the duration of the Winter and Winter temperatures are similar to those in the northeast. In my study, several of the treatment colonies had mite levels below the 0.01 threshold. Mite levels in the other treatment colonies were not high enough to have caused any damage, but they exceeded the 0.01 threshold and required treatment to prevent damage over the Winter. The important point is that the mite levels in the treatment colonies (all ≤ 0.07) were not yet high enough to have affected colony strength, health or wintering success, even though the colonies had not received a miticide treatment for an entire year.

To assess possible adverse affects of this method on colony health, I also measured Fall worker populations and seasonal honey production. Worker populations were statistically indistinguishable in the two groups. Honey production in the treatment group was greater than or equal to that in the control group. See the pdf file of Calderone 2005 at masterbeekeeper.org for more details.

Implementation You will need four drone combs per colony (plus a few extra). You can purchase drone foundation from a bee supply house and wire it into

frames. Use four horizontal wires, as drone foundation has no vertical crimped wires. One-piece plastic drone combs are also available. Between 26 and 30 days before anticipated apple blossom, place two drone combs in the upper brood chamber of your hive, one or two combs in from each side. From apple blossom until the end of the goldenrod flow, visit your bees every 26-30 days, remove the drone combs, and replace them with empty drone combs or with drone combs that you removed on the previous replacement date. Keep the combs you remove in a freezer until you are ready for your next exchange, but let them warm up right before returning them to your colonies.

You can shorten the interval between comb exchanges, but **do not** extend it beyond 30 days or you may have too many drones with mites emerging in your hive. If a drone comb becomes filled with honey, you will need to replace it with an empty drone comb and extract the honey from it before reusing it. In the north, you can exchange combs up to eight times a season using the 26-30 day interval between exchanges. To attain the efficacy I observed in my study, you will need to cull worker combs with more than two square inches of drone cells. Remember! The goal is to get a colony to consolidate its drone production in the removable drone combs.

Summary Drone brood removal will not completely eliminate the need for miticides; however, it will allow you to treat once a year and still maintain strong, healthy colonies that can successfully survive the Winter. We are working on fine tuning this method. Specifically, we want to know how many times you need to exchange drone combs during the season to ensure strong, healthy Fall colonies going into Winter. The four exchanges used here may be more than are needed. Presumably, the fewer times you need to do this, the greater the number of beekeepers that would be willing to do it.

Note: A ratio of 0.10 translates to 1/10 of a mite per bee or 10 mites per 100 bees. A ratio of 0.01 translates to 1/100 of a mite per bee or 1 mite per 100 bees.

- The maximum 30 day interval for exchanging drone combs differs from the 24 day development period for drones. There are several reasons for this. First, workers must spend 1-2 days cleaning out combs after they are returned to the hive before they can be reused. Second, the queen takes 2-4 days to fill the drone combs with eggs. So, a few drones may emerge in the hive with a 30 day interval, but not too many.
- Keeping the drone combs frozen between exchanges keeps the brood fresh and provides the bees with a tasty protein meal when they are returned. This may allow the colony to recoup much of its investment in the drone brood, thereby helping to keep the colony strong. Do not feed combs of decayed brood to your bees.
- Some concern has been voiced over the possibility that this method will select for mites that prefer worker brood. While I have learned to 'never say never', there are several reasons why this is unlikely to be a problem. First, efforts to select for mites that prefer worker brood have not been successful. Further, if there were to be a problem, one could stop using the method, and the mite population would likely revert to its 'preferred' state.
- Another concern is that this method will reduce the number of drones available for mating. This could be a problem. However, this method does not eliminate all drones from a colony, and if there are feral colonies in the area, there should be more than enough drones for virgins to mate with. However, without further refinements, this method would not be desirable for managing mites in a queen rearing operation.
- As with any new management protocol, evaluate this method on a few of your colonies to determine how well it works for you. As you become more comfortable with the method, you can expand it to more of your operation.

Acknowledgements

I thank Peter Borst, Helen Evans, David Ostermann, and Andrea Savage for technical assistance. This research was supported in part by grants from New York State Department of Agriculture and Markets, USDA-SARE (LNE00-130), USDA-CSREES-IFAFS (58-1275-2-025), the California State Beekeepers Association (CSDA), and the Organic Farming Research Foundation (OFRG) to NWC.

References

- Calderone, N.W. 2005. *Evaluation of Drone Brood Removal for the Management of Varroa destructor (Acari: Varroidae) in Colonies of the Honey Bee Apis mellifera L. (Hymenoptera: Apidae) in the Northeastern USA.* J. Econ. Entomol. 98: 645-650.
- Brodsgaard, C.J., and H. Hansen. 1994. *An example of integrated biotechnical and soft chemical control of Varroa in a Danish apiary, (pp. 101-105).* In A. Matheson (ed.), *New perspectives on Varroa.* International Bee Research Association, Cardiff, UK.
- Calis J.N.M., W.J. Boot, J. Beetsma, J.H.P.M van den

Eijende, A. de Ruijter, and J.J.M van der Steen. 1999. *Effective biotechnical control of Varroa: applying knowledge of brood cell invasion to trap honey bee parasites in drone brood.* J. Apic. Res. 38: 49-61.

- Charriere, J.D., A. Imdorf, B. Bachofen, and A. Tschan. 2003. *The removal of capped drone brood: an effective means of reducing the infestation of Varroa in honey bee colonies.* Bee Wld. 84: 117-124.
- Delaplane, K.S. and W.M. Hood. 1999. *Economic threshold for Varroa jacobsoni Oud. in the southeastern USA.* Apidologie 30: 383-395.
- Fries, I., and H. Hansen. 1993. *Biotechnical control of Varroa mites in cold climates.* Am. Bee J. 133: 435-438.
- Hart, T., and R. Nabors. 2000. *Pollen traps and drone pupae destruction as a method of Varroa control.* Am. Bee J. 140: 151.
- Horr, B. 1998. *Biological control of Varroa mites without chemicals.* Am. Bee J. 138: 801-804.
- Horr, B. 2000 *Why we do use — integrated Varroa suppression.* Am. Bee J. 140: 375-377.
- Marletto, F., A. Manino, and A. Patetta. 1990a. *Development of Varroa disease in colonies from which drone brood has been periodically removed.* Apicult. Mod. 81: 3-9.
- Marletto, F., A. Manino, and A. Patetta. 1990b. *Manipulative methods for Varroa control: considerations after a two-year trial.* Apicult. Mod. 81: 77-84.
- Marletto, F., A. Patetta, and A. Manino. 1991. *Further tests on Varroa disease control by means of periodical drone brood removal.* Apicult. Mod. 82: 219-224.
- Rosenkranz, P., and W. Engels, 1985. *Consistent drone brood removal, an effective biotechnical measure for reducing the damage caused by Varroa disease in honeybee colonies.* Allgemeine Deutsche Imkerzeitung 19: 265-271.
- Santas, L.A., and D.M. Lazarakis, 1984. *Using drone brood in the control of the Varroa disease of bees in Greece.* Entomologia Hellenica 2: 63-68.
- Schmidt-Bailey J., S. Fuchs, and R. Buchler. 1996. *Combination of varroaosis control with a swarm prevention method.* Pszczelnictwo Zeszyty Naukowe 40: 273-274.
- Shimanuki H., N.W. Calderone, and D. Knox. 1994. *Parasitic mite syndrome I. The symptoms.* Am. Bee J. 134: 827-828.
- Strange, J., and W.S. Sheppard. 2001. *Optimum Timing of Miticide Applications for Control of Varroa destructor (Acari: Varroidae) in Apis mellifera (Hymenoptera: Apidae) in Washington State, USA.* J. Econ. Entomol. 94:1324-1331.

A magazine helping small-scale farmers make a good living—and a good life—from the land.



1 year - \$18 (Canada \$24) - 4 issues
2 years - \$32 (Canada \$38) - 8 issues

Subscribe online or mail a check or money order to:

Farming Magazine is a quarterly publication.

Farming Magazine
P.O. Box 85
Mt. Hope, OH 44660

www.farmingmagazine.net

YELLOW JACKETOLOGY 101

Wasps are diverse, fascinating and important. But don't take them for granted for even a second.

Charles Martin Simon

The Yellow Jacket is a species of wasp, one out of 25,000 species of wasps in the world.

Wasps are incredibly diverse, fascinating and important creatures. We owe them a great deal. A case could be made that we owe our civilization to them, because they, not we, invented pottery and paper, and we only got those items from copying them. And where would we be without pottery and paper? It doesn't stop there. Wasps are beneficial insects, their primary food being other insects, including insects that harm us and damage our food supply, including mosquitoes, garden grubs, flies, grasshoppers, moth larvae and more. Certain species of wasp are specifically raised and used in IPM to control some crop pests, with more uses being discovered all the time. Certain wasps have very specific tasks. For example, most varieties of fig tree can only be pollinated by one wasp, *Blastophaga grossorum*. Without that tiny wasp, there would be more than two-thirds fewer figs, and that wouldn't be good. The smallest insect in the world is a wasp. And the deadliest insect in the world is a

wasp, the Asian Three-Step, so named because a person, once stung, will be dead in the time it would take to take three steps.

We human Americans are more concerned with Yellow Jackets than any other wasp, and that is out of defensive necessity. Their persistent belligerence around food sources, their vicious colony defense, their painful and long last-



ing stings, their painful bites and the tendency for infections to develop from those bites, make Yellow Jackets an insect not to be trifled with. "Leave them alone, and they will leave you alone," does not apply to Yellow Jackets. More people are killed by Yellow Jackets in the United States per year than by bees, spiders, scorpions, and poisonous

snakes combined.

All wasps will defend their nests, but Yellow Jackets (and Bald-Faced Hornets) do so the most aggressively. Stinging incidents usually occur at or near nesting sites, but foraging Yellow Jackets can and do sting well away from their nests, when they are conflicted with over food. It's never a good idea to conflict with Yellow Jackets; you are likely to suffer. Don't start flapping at them. If you want to eat outside and they won't let you, give up and eat inside; you will be much better off. But if you have to eat outside for unchangeable reasons, planned events such as birthday parties, weddings, etc., effective (and ineffective) methods for protecting outdoor eating from Yellow Jacket marauding will be discussed in the second part of this article, "Yellow Jacketology 101 - Part two," in the next issue of *Bee Culture*.

Yellow Jackets can and do get into soda cans and sting people on the lips and the insides of their mouths and throats. They can and do get trapped inside garbage cans around camping and picnic areas and are likely to come boiling out mad right into the innocent faces of careful campers when they diligently lift the lids to put more garbage in. It is ironic that the single most-effective and most-recommended method of Yellow Jacket control (keeping lids tight on garbage cans and putting all garbage into those cans) can result in the most-serious, single-sting, stinging incidents.

Reactions from stings vary from short-term, intense pain to severe, long-lasting pain (it can go on unrelenting for days), serious swelling and tenderness, long-lasting violent itching (it can go on as long as

The German Yellow Jacket or ground dweller, Paravespula germanica.



two weeks or even longer), and allergic reactions that are fatal unless medicine is administered quickly.

Multiple stings can cause a serious physiological problem. The sheer volume of foreign protein injected into the system plus red blood cell and tissue damage from destructive enzymes in the venom cause excessive breakdown products (tissue debris) to be carried to the kidneys for elimination, which can overload the kidneys and cause malfunction or even renal failure, requiring medical attention, sometimes even dialysis.

The primary diet of Yellow Jackets consists of other insects; they scavenge and even pollinate to some extent. But the problem comes with their tendency to forage on foods people eat, meats and sweets, and sometimes even people themselves. When they're out after meat and there is nothing else available, they might even try to take a bite out of you.

IDENTIFICATION

Yellow Jackets are sometimes mistaken for Bees but can be distinguished readily by their thin waists and overall sleekness. Yellow Jackets are 5/8" to 1 inch in length and have shiny bodies, with bright yellow and black banding. Yellow Jackets fold their wings parallel to their bodies when at rest. Bees have a barbed stinger and can sting only once; Yellow Jackets have a stinger without barbs and can sting repeatedly. Yellow Jackets have strong mandibles and also bite, often simultaneously with stinging, and since they are scavengers, their saliva is likely to be rich in noxious bacteria and liable to cause infection.

Yellow Jackets are also sometimes mixed up with Paper Wasps. The two species do have similar markings and overall appearances, but the paper wasp is lankier, slower, with longer back legs and a longer waist. The Yellow Jacket is tighter and quicker. The difference in their nests is obvious and unmistakable. The Yellow Jacket nest is always surrounded by a paper shell, so you cannot see the combs. The Paper Wasp nest is never surrounded by a shell, and you can always see the combs, usually just

The Eastern Yellow Jacket or cavity dweller, *Paravespula maculifrons*.



one comb, horizontal underneath an overhang, with the cell openings pointing downward. But the bigger nests do develop multiple combs.

There are three sub-species of Yellow Jackets:

1. the German Yellow Jacket or ground dweller, *Paravespula germanica*
2. the Eastern Yellow Jacket or cavity dweller, *Paravespula maculifrons*
3. the Common or Aerial Yellow Jacket, *Paravespula vulgaris*

All three subspecies occur with varying densities throughout the U.S.

The German Yellow Jacket builds tan paper nests underground that run between May and November/December, with peak worker populations generally consisting of 1000 to 3000 individuals. They often take over a portion of a gopher burrow and dig out and shape the cavity to accommodate their spherical nest preference, but when the digging is too tough (they might build the nest in a space against or into a rock formation in the ground, for example), they will conform the nest to the shape of the space. Sometimes there will be just a hole in the ground. Sometimes they will build an elaborate paper entrance structure on the surface.

Eastern Yellow Jackets build grey paper nests, inside cavities in structures above ground, hollows in trees, spaces in the walls of buildings, with peak worker populations also between 1000 and 3000 individuals. I have read that the nests will be soccer ball- or football-shaped, but actually the nests will conform to the shapes of the

spaces. Colonies run from May to November or December.

The Common or Aerial Yellow Jackets build fragile, tan paper nests that are so beautiful they qualify as architectural wonders. They hang out in the open from the limbs of trees or the overhangs of roofs or sometimes integrated into bushes. These nests have been described as soccer ball- or football-shaped but never are; they are always imperfectly spherical. These also peak between 1000 and 3000 individuals and run between May and November/December.

The three subspecies are consistent in their nesting habits. Ground dwellers always nest in the ground. Cavity dwellers always nest in cavities. Aerials always build hanging nests outside. They are consistent in their breeding habits also and do not mix. And they are consistent in their eating habits as well: foraging for protein early in the season, shifting to carbohydrates in the Fall.

The Aerials, it has been stated by Yellow Jacket pundits, eat only mosquitoes. I have heard this more than once, and once on a radio broadcast about stinging insects. If it is true, then this subspecies should be protected, since the variety and deadliness of the diseases spread by mosquitoes are much more damaging to us as a species than the pain and deaths caused by Yellow Jackets. Later in the season, I would think the Aerials would have to forage for sugar just like the other subspecies and would therefore bother us when we're eating outside. But I have read that the Aerials do not become scavengers for carbohydrates later in the season



The Common or Aerial Yellow Jacket, *Paravespula vulgaris*.

and therefore do not bother us at picnics. I don't understand this; it's inconsistent with my understanding of Yellow Jacket behavior, but if it is true, it would be even more reason to protect them. However, they are characteristically defensive when their nests are disturbed or a threat perceived, so nests that develop in human, pet, or livestock areas will have to be dealt with.

But there is the possibility of relocating aerial nests to more Yellow Jacket-friendly locations, and a method for doing this is included in the second part of this article.

Yellow Jacket nests are always enclosed by shells constructed of paper made a dab at a time from wood fiber bitten off dead wood and chewed and mixed with saliva. There will be a small entrance opening near the bottom, and sometimes not obvious secondary or tertiary (or even more) openings further up (plugging the main entrance and thinking you have them contained can have disastrous consequences). Inside the paper shell will be up to 10 or more horizontal combs, with cell openings on the undersides, and larvae, pupae, and stores hanging downward.

Habits

Yellow Jackets are social wasps that live in colonies composed of workers, queens and males. Colonies are annual, living for only one season from early Spring to late Fall/early Winter. Toward the end of their season, the colonies produce many new queens for next year's colonies and males to mate with them. The males die after mating, and the new mated queens fly off to find protected places to overwinter, such as hollow spaces in logs, stumps, underneath bark, leaf

litter, and cavities in the ground and in man-made structures. The remaining workers and the original queen die off, and the nest is not reused.

The overwintered queens come out of their shelters on warm days between late February and the end of April, select sites, and build small paper nests containing combs of 30 to 50 brood cells in which they lay the first eggs. When those eggs hatch, the queens feed the larvae for 18 to 20 days. The larvae then pupate to emerge as infertile female workers. By mid-June, the first workers take on the tasks of nest expansion, care of the queen and larvae, foraging, and colony defense. From that point on, the nest expands in size and numbers, accelerating rapidly, as rapidly as conditions allow.

Until her death in late Fall/early Winter, the queen remains inside the nest laying eggs. The colony reaches its peak in August and September with 1000 to 3000 (sometimes as many as 4000 or 5000 or even more) individuals. When the colony peaks, reproductive cells are built and the queens for the following year and the males to fertilize them are produced. The newly emerged imago males and queens remain in the nest and are fed by the workers for a time, so that the new queens can build up fat reserves in their bodies to facilitate overwintering. When they are ready, the new males and queens leave the nest to mate. After mating, the males die, and the inseminated queens find protected places to spend the Winter.

Workers dwindle and die off; the original queen dies. Empty nests generally decompose and disintegrate. Nests inside structures can

remain intact for a long time if they stay dry but are not used over again.

In the Spring, the cycle begins again.

But sometimes a nest might live right through Winter without missing a beat. I have encountered them going full blast in late Winter when they are supposed to be long dead and in early Spring when they are supposed to be just starting up. I have heard of a nest in Pennsylvania that completely filled an abandoned warehouse, having gone on uninterruptedly increasing for many years. That nest was unapproachable with and invulnerable to any standard eradication techniques, and had to be eliminated by burning down the entire warehouse. And there was one recorded in South Africa the size of a boxcar. I have personally eliminated nests as large as bathtubs, one in the ground and one between two roofs on a building. These obviously had persisted and increased more than one season, maybe more than two.

Yellow Jackets are much more adaptable, flexible, stronger, smarter, deadlier than humans generally give them credit for.

Adults feed on carbohydrates (fruit, nectar, tree and bush sap); larvae feed on proteins (insects, meats, fish, carrion, offal, mammalian fecal material). Adult workers chew and predigest with saliva the food fed to the larvae, and the larvae in turn secrete a sugary substance that is eaten by the adults. This exchange of food is called trophallaxis.

After the colony peaks, foraging workers change their food search from meats to carbohydrates, because diminishing larvae numbers have started failing to meet their sugar requirements. It is at this part of the cycle that Yellow Jackets become most troublesome when we are trying to eat outdoors, as soft drinks and other sugary substances become a convenient if not more convenient carbohydrate source than trying to find it in nature.

When Yellow Jackets attack around the nest, you are well advised to leave the area as quickly as possible (i.e. *Run!* – run instantly and run fast). It is possible to outrun them, sometimes, but only because they will let you, because when you show immediate willing-

ness to leave the area upon being warned, they are willing to let you go. They are vicious but not unreasonable, unless or until they lose their tempers. I have outrun them many times, but you might not be able to. So get inside a building or vehicle and then squash any that come with you. Or if that's not available, head into the nearest bushes and move through them, twisting and rubbing to dislodge and escape pursuing attackers, and try to come out of the bushes on the side away from the nest.

It is a good idea to have the concept of running away considered and accepted in advance, so that if or when you are attacked, you respond without hesitation, and don't stand there flailing around while you assess the situation and make up your mind what to do. Some people are insulted when they are attacked and restricted from reacting, because to react would be to give something so small more power than the human is able to give up, and this in some mysterious way would somehow diminish the human. This is a kind of pride that can result in a lot of pain, - even death. If they thought it through, they wouldn't be that way, but when an attack is occurring is not the time to think about it, so they fail to move based on ingrained preconceptions of values based on size differentials. It's best to get the thinking part resolved and over with right now, and give the Yellow Jacket its due respect.

For most people a sting is painful but temporary, but for allergic individuals a single sting will cause a life-threatening reaction (anaphylactic shock), requiring prompt medical attention. Symptoms of anaphylactic shock include: diffi-

Inside the paper shell will be up to 10 or more horizontal combs, with cell openings on the undersides, and larvae, pupae, and stores hanging downward.



culty breathing, wheezing (abnormal, high-pitched breathing sounds), confusion, slurred speech, rapid or weak pulse, blueness of skin (cyanosis) - especially lips and nail beds, redness of skin, hives, generalized itching, light-headedness, dizziness, fainting, anxiety, feeling the heart beat (palpitations), nausea, vomiting, diarrhea, abdominal pain (cramping), nasal congestion, cough. Symptoms develop rapidly, usually within seconds or minutes.

Allergic individuals should consider carrying a sting kit (injectable epinephrine - synthetic adrenalin, with syringe, cotton balls, and alcohol) and be instructed in its use or/and go to an allergist for desensitizing treatment.

Yellow Jackets are especially bad when they get inside clothing. They are very good at finding and slipping into any opening, even tiny and well-hidden ones, and once inside, to continue the attack with undiminished vigor.

Yellow jackets are great insects, and I advise living with them when-

ever possible. The problem is they are just about impossible to live with. I have read advice from experts to just leave the nest alone to complete its cycle, since it is going to die off in Winter anyway. But Yellow Jackets get more and more desperate and aggressive as their season winds down and food sources diminish, and since each nest that is allowed to complete its cycle is going to produce many new nests the following season, it is probably prudent to eliminate them whenever they are found in wrong places.

"Yellow Jacketology 101 - Part Two," in the next issue will deal with removal, elimination, and prevention techniques and practical aspects of Yellow Jacket control as a business, such as tools, insurance, certification, advertising, licenses, and permits. Stay tuned. **BC**

Charles Simon removes yellow jackets, and other in-the-way insects, and keeps bees near his home in Soquel, California.

Hawaiian Queen

QUEENS

Ph. 808-328-2656

Toll free: 888-485-2244

FAX 808-328-7433

email: HIQUEEN@HIALOHA.NET

www.hawaiianqueen.com

USDA Selected Russian Breeder Queens

Charles Harper

Harper's Honey Farm

421 Louveteau Rd., Carencro, LA 70520

337.298.6261

labeeman@russianbreeder.com



Plastics Packaging Concept
12 oz. Capacity In An Angel
Shaped Container
(14 oz. net wt.)

John 3:16 engraved on the
back - white caps available
separately & custom labels.
Now Available In Clear
Plastic

P.O. Box 617
Garden City, MO 64747
816.862.8703 or
FAX 816.862.8702
www.ppc3.com

BEEKEEPING SNAPSHOTS

James E. Tew

Just a short time ago, as did you, I started another new year. As is the usual case, academic funding is predicted to be tight this year. I can't name a single year in my entire career when funding was "loose." Right on schedule, my administrators have made the annual requirement that I predict my program's progress for the upcoming year and review my activities during the past year. It is, as though once a year, I am required to review the past and predict the immediate future. If I could accurately predict the future, I would be in a different line of business and be a wealthier man. Other than what is required to predict my bee program's path for the upcoming year, I make no effort to predict the future. For me, predicting the future is too uncertain, but reviewing the past is safe – even insightful. It is with this mindset that I write this article.

Back in the early 70s, my wife earned her degree in office procedures. Time passed and things changed. Now she teaches Cisco™ networking and computer usage. What she does now has essentially nothing in common with what she originally trained to do. Typewriters, keypunch machines, and adding machines – they're all gone and she helped dump them.

In 1963, our Chevrolet Biscayne was not worth repairing with 86,000 miles on it. It had a two speed transmission, an AM radio, and a heater. I am nostalgic about my first car – a 1959 VW Beetle with a 39 hp engine. It had no gas gauge. To check the fuel level, I would put the jack handle in the tank to determine how much fuel remained. It's maximum, flat road speed was 53 mph. Presently, my JEEP Cherokee has

160,000 miles on it, but that is dwarfed by my lab's 1996 Box Truck that has 301,000 miles. If given a choice, would most of you choose a 1958 vehicle or one of today's greatly improved automobiles? While cars are the same as cars of past generations, they are markedly differently.

My early years were spent watching our black and white TV that would, for the most part, pick up three stations – if the outside antenna was properly adjusted. Howdy Doody, Pinky Lee, and Gun Smoke were some of my TV staples. Now I have the TV system that most of you have that gives me access to hundreds of channels and automatically records the selected ones I can't watch at the moment. I have watched more TV in the past year

than I watched in the previous five years. While I am not much of a TV watcher, I love the new system and have no interest in going back to the pre-remote black and white technology.

As you know from previous articles, I am a woodworker. If you want to truly bore my grand daughter, try to give her an old-fashioned wooden toy that doesn't have an interactive computer chip and a vocabulary that rivals that of the average adult. Even I prefer today's modern toys to the wooden train that actually required kids to have an imagination. (I still have my Erector Set, Lionel train, and my Daisy Eagle BB gun, but those toys would be inappropriate for today's kids – too dangerous.)

As a young teenager, I could buy 22 cartridges, fireworks, and cigarettes. I could ride – legally – on the tailgate of my Grand Dad's 1953 Dodge Pickup as he drove down the road. If I fell off, it would be my fault – not my Grand Dad's, but the truck was normally only traveling about 25 mph.

So how does any of these ramblings relate to beekeeping? I stumbled into beekeeping about 30 years ago. While there are those among you who have been keeping bees much longer, 30 years is still a long time. While beekeeping is the same today, in other ways, it is remarkably different. Major supply companies are gone, but major new companies have replaced them. My earliest beekeeping concerns were commercially oriented. For a few years, I nurtured the idea that one day I would be a commercial beekeeper. I interviewed with an Alabama commercial beekeeper asking for employment and a promise of career growth in beekeeping. In retrospect, I suspect he was protecting me, but he told me to go back to graduate school for advanced studies in beekeeping. Upon graduating, if I still wanted a life in commercial beekeeping, I was to return to him. I graduated, but I never went back. I realize now that he knew I would not.

In the 70s, I remember beekeepers totally resisting plastic beekeeping components. Some of you said, "The plastic jars would affect the flavor of honey." Hives were wooden and frames were nailed to



My "Survivor" hive in the Winter.



Only a few dead bees near the "Survivor" hive entrance.

gether; there was no other option. As have so many of you, I have stretched hundreds of yards of wire in order to wire frames that would then be used to embed foundation. I pressed brass eyelets (later made from aluminum) into end bars until my palms were blistered. When I finally got my first pneumatic brad nailer, a Cadillac car would not have brought me much more pride.

Beekeepers in the past seemed to be generally more financially oriented. The plans were always the same – to get enough hives that would make enough honey and pollinate enough crops to make money – enough money for the beekeeper that he could call his passion his business. Occasionally, that plan worked, but more often than not, the beekeeper burned out and downsized as ever-increasing age and reality accumulated upon him or her.

I was one of those beekeepers. How to motorize my extractor. How to get a larger extractor. How large of a sump to match my honey pump's capacity. Buildings, trucks, storage, equipment – I wanted it all. Today, old galvanized honey extractors abound – quaint and usable, but not desirable. The new equipment, made from stainless steel, is bright and shiny, offering many

years of maintenance-free service. While I wouldn't mind you getting it, I no longer have much interest in acquiring this caliber of equipment.

Then there has been my University life. A bit like my wife's career, my job assignment has frequently changed during the years. My earliest responsibility at Ohio State was to teach commercial beekeeping. That program and those days are long gone. Today, the bees are the same, but my job is significantly different. Thirty years ago, beekeeping was heavy-duty and even a bit primitive. Just as with my old cars, I feel nostalgic about old beekeeping, but I have no desire to go back there. I like the improved protective gear, plastic components and stainless steel.

What about you?

And you were generally different thirty years ago. It is a common fact that it's nearly impossible to get officers for bee clubs and those who do accept the responsibility must face complicated topics and occasionally be concerned about legal issues. Bee club members were more politically active. But how can I criticize you when I don't volunteer as much as I once did? Not at church, not at civic clubs, not for

the community, I don't commit too much any more. "I'm busy." "I have to work." "Others are better qualified." Universally, beekeeping groups have challenges getting fresh, energetic officers and in procuring monthly program speakers.

Beekeepers of the past touted honey bees as "Angels of Agriculture." Pollination was the key to keeping a vibrant U.S. industry. While that is still true today, the ditty would probably more correctly read, "Angels of Agriculture in South, Central, and North America." Honey bees are the world's pollinator, but much of that pollination service is provided outside the U.S. now. The cantaloupe that we eat in November was probably pollinated by honey bees, but not by US honey bees. So beekeeping things are bad – right? No, but beekeeping things are different from what they were. But what things are not different as I tried to demonstrate with my reflections on careers, automobiles, toys, and you.

In the December¹ issue of *Bee Culture*, I introduced you to an apparent survivor colony that I found living in abandoned equipment in an abandoned yard. In that article, I reflected on some of the changes that have occurred since I was last in that yard. I asked your opinion on what to do with a survivor colony that had been living – apparently for several years – without assistance from me. Using various communication techniques, about 25-30 of you told me to leave it alone. In fact, not a single one of you told me to upgrade the equipment and initiate pest control procedures. What does this skewed response mean? Maybe those of you who felt that it was a lost cause not to upgrade the hive also felt that it was a lost cause to communicate about managing it. Well, whatever, the overwhelming recommendation is to leave it alone. To all those who took time to write, I thank you and enjoyed having your input.

A suggestion that several of you made was to completely leave the colony alone, but to put other equipment in the yard to serve bait hives. Future swarms that leave would have potential housing in the yard.

¹ Tew, James E. 2005. *An Unclear Case of Colony Survival*, *Bee Culture*. Dec. 2005. Vol 133 (12). Pp 41-43.

Possibly, some information could be drawn from the number of swarms that accumulate. I will do that. I have mountains of old, unloved equipment. I have only visited the colony once since describing it you. Winter's snow and mud have become an increasing challenge. But when I was in the now-snow-covered yard, as was the case last Summer, everything was quiet – even lonely. This time there was no buzzing bee activity – just me and the wind.

The only clue that bees were alive within the hive was the presence of a few dead bees on the ground at what had been the hive's front. I can't really draw any conclusions on the colony's strength based on the dead bees. Maybe, most of the colony's dead bees are contained within the bottom deep. Maybe it is wintering so well that nearly no bees are dying.

I will revisit the colony in the Spring and take swarm boxes along. Otherwise, as you and I have decided, I will do nothing, but watch. If this colony should die this Winter, I will perform a colony autopsy in an attempt to determine what has been this colony's history.

A resolution for the 2006 year.

In past articles, I have alluded to my haphazard manner of responding to your communications in reference to my articles. If I am in

my office and my schedule is normal, you probably get a response. If I am traveling or am returning from an absence, to face a large mail response (most of it junk), your chances of a response decline. I don't feel good about this procedure. I appreciate each of the communications I get from you and I should have a better way of responding other than my present hit/miss procedure. To each of you who communicated with me – for any reason – I thank you. To those of you who communicated with me asking for a response and didn't get it, please try again.

Beekeeping 2006.

Have a look at your beekeeping world now. That view is a snapshot of beekeeping. As I reflect on my past beekeeping experiences and acknowledge 30 years of changes that have occurred, I fully realize that my review of beekeeping in 2036 can only hold unforeseen changes, too. As has been the case so far, I suspect that the primary changes will in beekeepers and not in bees. As in my survivor colony, bees seem to be same, beekeepers change.

Dr. James E. Tew, State Specialist, Beekeeping, The Ohio State University, Wooster, OH 44691, 330.263.3684, Tew.1@osu.edu; www2.oardc.ohio-state.edu/agnic/bee/; beelab.osu.edu/

Bee Culture Visuals

Videos - VHS Format

X204V *Beginning With Bees*
Professionally made 'How To Get Started.'
60 minutes. **\$30.95**

X228V *Smokers and Reading Frames*
Keep your smoker lit. What are you seeing on that frame, Jim Tew, 30 minutes. **\$25.95**

X229V *Assembling Equipment*
Putting together standard equipment with Jim Tew. 60 minutes. **\$32.95**

X230V *Instrumental Insemination*
The only one of its kind by Susan Cobey. Excellent detail. **\$60.95**

X231V *Finding The Queen*
Finding the queen was tough, but not anymore. Jim Tew. 60 minutes. **\$34.**

X233V *Small Scale Harvesting*
How to harvest, uncap, extract and bottle honey, Kim Flottum. 60 minutes. **\$30.95**

X235V *Introducing and Marking The Queen*
Removing attendants, marking & handling, push-in cages & introducing queens to nucs & full colonies. 30 minutes. **\$29.95**

X236V *Queen Rearing Video NEW*
Accompanies Successful Queen Rearing Manual (X157), Marla Spivak. **\$42.50**

Posters and Miscellaneous

X46M *Life Cycle of the Honey Bee - Wall Chart*
Great for demos and fairs, **\$13.50**

X69 *12 Color Study Prints*
Giving a talk? These are perfect. Photos and explanations. **\$32.50**

X75 *Beekeeper's Year Wall Chart*
What to do, when and why. For talks and honey house use. **\$13.75**

X130 *Pollen Poster*
Characteristics of pollen grains, dried pollen & composition of pollen. Bees gathering & returning, 27" w x 19" h. **\$16.**

X131 *Honey Poster*
Honey in the frame, uncapped & extracted. Explains composition & different colors & sources, 27" w x 19" h. **\$16.**

X132 *Honey Bee Poster*
Drawings of queen, drone, worker & differences. Hives & information about pollination & honey comb, 27" w x 19" h. **\$16.**

X133 *Propolis Poster*
Explains composition & harvesting. Excellent color photos, 27" w x 19" h. **\$16.**

X134 *Royal Jelly*
Excellent photos of queen cells, queen grafting and explanation of this very special hive product, 27" w x 19" h. **\$16.**

Call 800.289.7668 or
visit www.BeeCulture.com



YOUNGER SMOKER
PROPANE HEAT VAPORIZING A SMOKE FLUID

- Dependable multi-hour propane operation
- Essential oil smoke fluid available
- Reduced fire hazard
- Safe, effective beekeeping control
- Durable light-weight quality construction
- Easy to use
- Pin-point application
- Fast on and off

Centennial Beekeeping
Attn: Paul Younger
PO BOX 9402
Chandler Heights, AZ 85227

Send \$4.00 for video CD (includes shipping and handling) VISA / MASTERCARD accepted

888-895-5606 www.newbeesmoker.com



Laurence Cutts

—Jennifer Berry

He's been in the middle of everything honey bees have.

If you ever meet Laurence Cutts, from Florida, you would never forget him. He is one of a kind who is always willing to share his knowledge and experiences about bees, beekeeping, and life in general. I sat with Laurence during lunch recently, and in between bites, I asked him to share his life as an apiary inspector and beekeeper. Here is his story.

Laurence is a third generation beekeeper with his legacy dating back to 1889 when his grandfather started keeping bees. Over time, the business grew and he became a prominent queen and package producer in Montgomery County, Alabama. Eventually Laurence's father took over the business and had many successful years himself until the need for lumber almost put him out of business. It was 1943, WWII was in full swing and the demand for timber was great. Numerous (tulip) poplar trees were being cut in and around his apiaries for the war effort. Since these trees were a major nectar source for the bees he was forced to purchase and feed sugar, which greatly cut into his profits – and profits were scarce during the war. Earlier, he had expanded his operation by moving colonies to Florida. Thinking he would have to feed them also, he headed south only to find the colonies were “plugged up” with honey. A decision was made on the spot and he relocated the business and his family to Chipley, Florida.

Laurence worked for his father but started taking on more responsibilities during the 1970s, eventually taking over the business. He,

too, was involved in the queen and package industry but expanded the business into honey production. Laurence had colonies all throughout North and Central Florida, and North Carolina but moved them to the Everglades when soybeans in his area were treated with regular applications of Sevin® dust.

However, shortly after his travels south Laurence found himself out of the queen and package business due to the discovery of tracheal mites. Packages and queens were quarantined in Florida in an effort to contain the pest. Unfortunately, most of the packages Laurence sold were sent to Nova Scotia and Prince Edward Island. Laurence decided to shift gears and convert the business over to honey production, but with a poor spring flow, profits were lost. Laurence said he “saw the hand writing on the wall.” Right about this time, the State Apiary Inspector in Florida, Leroy Putnam, died of a heart attack. After Mr. Putnam's death the agriculture commissioner asked Laurence to help in the search for a new state inspector. The search ended when Laurence was convinced to take the position in 1985. As Laurence puts it “I got my first job one day before my 50th birthday.” He worked 18 years as chief apiary inspector for the state of Florida. This was a rough time for the beekeeping industry: introduction of tracheal mites, *Varroa* mites, small hive beetles, and rampant resistance to AFB. As a honey bee inspector, Laurence was exposed to the good, the bad and the ugly, but

he loved every minute. Laurence's retirement came during another dark time for Florida's beekeepers: the arrival of Africanized honey bees. Not only is this a problem for the beekeeper who may be exposed to an Africanized colony but the backlash from media sensationalism that may erupt after the first stinging episode could be devastating to the industry. Public hysteria could lead to a ban on beekeeping in certain counties and urban areas throughout Florida and the Southeast. Laurence feels the hobby and backyard beekeepers will be a great asset in the fight against AHB's. He explained how managed colonies saturating an area will be the first defense against AHB's becoming established.

Sideliners are also some of the most knowledgeable and politically influential people in the industry. Laurence said “they're the real promoters and educators in the business because they're usually the ones speaking to schools and various groups on the importance of bees and beekeeping.”

Hopefully, as the public becomes aware that bees will not invade their home through windows and chimneys, knock over furniture and chew through doors to sting them, the misconception about Hollywood's “killer bees” will subside. But until then, education will be the beekeeper's best defense.

Even though Laurence has been involved in the beekeeping industry for decades now, he is also well-known for his story telling. Beekeepers always have a tale to tell, but just imagine the situations state inspectors are exposed to when dealing with the public. For instance . . . One day a lady phoned and was hysterically screaming about killer bees surrounding her home. She explained how no one in the entire trailer park could open their doors due to the fear of being stung to death. She wanted somebody to come now and “git rid of these varmints before they kill us all.” Laurence tried to talk some sense into her by explaining that Florida didn't have killer bees at this time, but she wouldn't listen. Laurence told her he would send an inspector right away to check out these “killer bees” and take a sample. The lady and her husband were retired

and lived in a small trailer park with about six other trailers. When the inspector arrived he immediately knew the "varmints" were not killer bees but in fact your run of the mill hornet. During his visit that day the entire story was revealed. The hornets had built their nest inside an old magnolia tree in front of the lady's trailer. The husband loved that old tree, and knowing this, his wife threatened to cut down the tree if her husband didn't take care of the "bee problem." So he grabbed an old cane fishing pole, tiptoed toward the nest and beat it to a pulp. Unfortunately for him, he only destroyed the nest and not the inhabitants inside. They took to the air. With no home to return to, the hornets were flying haphazardly around the park. The husband had taken several stings, so the people in the trailer park were afraid to venture outside with all these mad hornets flying around. The inspector calmly informed the residents that the hornets would soon disperse and life would return to normal. Lawrence never received another call from that trailer park again.

Soon after that there was another killer bee incident to deal with. A lady called from Miami complaining about a killer bee that was trying to attack her through the window. Laurence asked her to describe "the bee" which she quickly informed him was two inches long and fire red. It was beating itself against the window screen she explained and trying to get in the house to kill her. Laurence knew that it wasn't a killer bee and again tried to explain this to the women. She wasn't convinced and as hysteria grew in her voice Laurence assured her someone was on the way. When the inspector arrived at the apartment, he knocked several times on the door but there was no answer. Eventually somebody came out from next door explaining that the lady who lived there was taken back to the mental facility.

I asked Laurence to describe one of the scariest situations he remembers as a beekeeper and he immediately began to tell me about the time when he and his son were moving a load of bees out of the Everglades. It was late and they were just about to arrive at the bee-

yard located several miles off a paved road. The two trucks were loaded down with colonies which were packed with honey. Add to that, it had been a particularly wet Spring and the dirt road they were traversing had numerous mud holes and ruts. His son, while driving the two-ton truck, tried to avoid one of these mud holes by going around it. Unbeknownst to him, there in the dark lay an even bigger hole and the back-end of the truck slowly sank into a sea of mud and muck. The truck was leaning over to such a degree they just knew it was going to lay over on its side at any moment releasing all 120 colonies. After inspection they realized a wrecker would offer no assistance so they opted for plan B; jack up the truck and hopefully drive it out themselves. They drove home, picked up their 12-ton jack, stirred the parts-man out of bed in order to purchase another 12-ton jack, and collected all the timbers they could find. When they returned, Laurence began shoveling mud from around the tires until he could get the jack under the rim. The process was taking hours and all the while Laurence worried that the truck would tumble over and bury him in a sea of mud and angry bees. To prevent this from happening, he cut a scrub oak tree and propped it against the truck in hopes of stabilizing it. However, he knew the tree was no match against the two-ton truck if it began to lay over. "It would have been as useful as a toothpick in ice cream if that truck began to roll." After hours of hard work, the truck was freed, the bees unloaded and they were finally home, safe in bed.

Laurence told me many stories that day I visited with him in Florida. I've only been able to share a few with you, however I did save the best for last.

Laurence and his oldest son were moving bees down to the Everglades when they decided to pull off the road and "check the load." They were somewhere north of Brooksville on a dark, lonely stretch of highway with not a car in sight. Now when a beekeeper says he's going to "check the load" while standing on a lonely stretch of road, he's probably not thinking about checking the bees. Anyway, it hadn't

been two minutes since they pulled over when they heard the sound of a car engine crank up about a quarter of a mile down the road. Then all of a sudden this raggedy, old car flew up behind them and slammed on the brakes. A crazy looking character jumped out of the car screaming, "Did you see them, did you see them?" Laurence of course replied with a touch of apprehension in his voice, "Did I see what?" "The UFOs!" the excited man exclaimed, "they're everywhere, everywhere, I see them all the time." He began explaining to Laurence and his son that there were these small UFOs flying overhead every night and when a plane flew by to investigate, they would quickly fly back to the mother ship and disappear. He also rambled on about how they could read your mind and that he'd been waiting for years for them to come and take him for a ride. He repeatedly stated how he wanted to "ride really bad." Laurence and his son wished him luck and quickly returned to the truck. Safely inside and several miles down the road, Laurence looked over at his son and said "Were you thinking the same thing I was?" His son replied without hesitation, "Don't come get him now! Don't come get him now! Don't come get him now!" Fortunately for the both of them, the aliens were able to read their minds instead.

Laurence retired two years ago and is now back in the bee business. He keeps around 300 colonies for the production of honey and hopes to build a honey house next year. I asked him what was the best part of his job, and he told me it was working with beekeepers and the wonderful educational opportunities he enjoyed during his 18 years of service. Laurence is still making the rounds at local, state and national meetings. If you see him at a meeting ask him for a story, and he'll certainly oblige since he has hundreds.

See y'all soon. **BC**

Jennifer Berry does research on Varroa resistant queens at the University of Georgia in Athens. She is also the President for EAS 2006 which will be at Young Harris College in Georgia in August this year.

FARM TO FORK



It is reasonable to expect that in the future the requirements for beekeeping will parallel other sectors of food production and safety.

Perhaps you have heard the phrase, "From Farm to Fork." It is not uncommon in agricultural circles and is usually aimed at the consumer. The idea is that what they are eating has received continuity of care throughout the journey from raw agricultural product to finished, ready-to-use table fare. In the past, to a degree consumers have taken for granted that the food products they purchase are of acceptable quality, safe, and represent the product they are expecting.

A recent trend, however, is that of increasing skepticism about the finished product on the shelf. More and more, consumers want additional information about the products they consume. Where did it come from? (Country of Origin Labeling) What is in it? (Nutritional Information Panel) Are there any health risks associated with the product? (Allergen notice and Trans-Fat labeling). As you can see, there have already been a number of changes over the years – many of them fairly recent. Because the consumer has become more discerning about the food they purchase, growers, packagers and marketers have had to respond with changes in the way those products are handled. As an example, look at the cattle industry – the latest trend is the RFID ear tag that tracks each individual animal from birth and is used to

record medical treatments and location of birth, right up to the meat packer. Another example is in the fruit and vegetable industry. Some growers are required to use seed supplied by the packer or distributor, make their fields available for inspection at any time, and keep detailed records about pesticide and nutrient applications as well as the use of irrigation. They have to abide by strict re-entry and harvest inter-

"Maybe from bee to biscuit is more descriptive."

vals for each crop and have to submit those records with the sale of the crop. That is the trend in the food industry; it is the standard to which honey will eventually be held.

As with any trend, it is far better to be at the forefront of change than to come in at the tail end. Ask the typewriter manufacturers – now out of business – if they were at the forefront of change in their industry. They will tell you that they missed their opportunity. We must not miss ours.

The consumer demands quality and traceability. The distributor

passes that demand to the packer. The packer must share that responsibility with the beekeeper. *If we fail to perform to the standards set before us we will be replaced.* The single greatest asset to our industry is the perception of honey as a pure and natural product. We must protect that perception and to do so, we must be able to prove that it is true.

What does that mean for the packer and producer? It means that we must collaborate to secure our respective positions and work together to deliver what the consumer expects. It is reasonable to expect that in the future the requirements for beekeeping will parallel other sectors of food production. Examples of such requirements include detailed hive treatments, evidence of proper cleaning and maintenance of the extraction facility, proper training of employees in the safe handling of food product, complete product traceability, and the ability to recall any product that may be determined unsafe. To that end, Golden Heritage Foods has developed a supplier audit designed to help producers meet the expectations of the consumer. The general contents of the audit include: building design, construction and maintenance, lighting and ventilation, waste disposal, sanitary facilities, water quality, storage of chemicals, supers, empty drums and con-

tainers, processing/extraction from the comb, employee training, sanitation and pest control, recalls, and integrated pest management. For a complete copy of the current revision, visit www.ghflc.com for a printable PDF. Below are the 17 categories of the audit and brief description of each. There are 95 questions to consider in your audit.

Several trial audits were performed this past fall and they were well received by the producers that

participated. This audit was also presented to the National Honey Board in Kansas City last October and is under consideration as one option for a national audit program.

The goal of our program is to establish a workable audit that makes sense for beekeepers, does not incur great cost and gives each facility the flexibility to choose those improvements that make the most sense for their situation. It is not meant to be a "do this or else" proposal. Having participated in an

audit allows a beekeeper to have a point of reference – where do you stand in comparison to other beekeepers both in the U.S. and abroad. It is no longer enough to say that we have a quality product, we have to prove it. The packer has been in this position for some time now, and it is our responsibility to help the producer meet these standards as well. This is the trend, it is the beginning – will we set the standard and lead the way, or will we let others dictate those standards to us?

- 1. Building Exterior: Design, Construction and Maintenance**
Buildings and surrounding areas are designed, constructed and maintained in a manner to prevent conditions which may result in the contamination of food.
- 2. Building Interior: Design, Construction and Maintenance**
Building interiors and structures are designed, constructed and maintained in a manner to prevent conditions which may result in the contamination of food.
- 3. Building Interior: Lighting and Ventilation**
Adequate natural or artificial lighting and ventilation should be provided throughout the establishment and all artificial lighting in production areas must be of a safety type and protected to prevent the contamination of food.
- 4. Building Interior: Waste Disposal**
Sewage, effluent and waste storage and disposal systems are designed, constructed and maintained to prevent contamination.
- 5. Sanitary Facilities: Employee Facilities**
Employee facilities are designed, constructed and maintained in such a manner that employees are encouraged to use proper hygiene in order to prevent contamination.
- 6. Sanitary Facilities: Bee Control**
Effective bee controls are in place to prevent entry, to eliminate bees in the production area

- and to prevent the contamination of food.
- 7. Premises: Water Quality Records and Program**
The potability of hot and cold water is controlled to prevent contamination. Written records that adequately reflect control of water quality and treatment are available upon request.
 - 8. Transportation and Storage: Food Carriers/Vehicles**
Carriers used by the establishment are designed, constructed, maintained, cleaned and utilized in a manner to prevent food contamination. This includes both contract carriers as well as vehicles used to transport food, components or equipment.
 - 9. Transportation and Storage: Chemical Storage**
Non-food chemicals are received and stored in a manner to prevent contamination of food, packing materials and food contact surfaces.
 - 10. Transportation and Storage: Storage of Honey Supers**
Storage and handling of honey supers is controlled to prevent damage and contamination of the food during both transportation from the beeyard and storage within the extraction facility.
 - 11. Equipment**
All equipment is designed, constructed, installed and maintained to function as intended, to allow for effective cleaning and sanitation and to prevent contamination of food.
 - 12. Processing: Handling and Treatment of Supers/Frames**

- Supers and frames are handled in a manner designed to prevent contamination from environmental sources (dust, debris, insect parts, soil etc.), bee removal chemicals, and uncured honey.
- 13. Personnel: General Training**
Every food handler is trained in personal hygiene and hygienic handling of food and operation of equipment such that they understand the precautions necessary to prevent the contamination of food.
 - 14. Personnel: Cleanliness and Conduct**
All persons entering food handling areas maintain an appropriate degree of personal cleanliness and take the appropriate precautions to prevent the contamination of food.
 - 15. Sanitation and Pest Control**
An effective sanitation program and records for equipment and premises is in place to prevent contamination of food.
 - 16. Recalls**
The establishment has a written plan to facilitate the complete and rapid recall of any lot of food from the market.
 - 17. Integrated Pest Management (IPM)**
The establishment is aware of and actively participates in IPM strategies that are designed to reduce costs, inputs and residues while maintaining a viable and profitable crop.

Eric Wenger is the Director of Laboratory Services for Golden Heritage Foods in their Kansas Division.

OVERCOMING FEAR

You can eradicate the ignorance which ultimately leads to wrongful judgments, irrational fears and extreme prejudice.

Linnet McLaughlin

I am a beekeeper's wife. I find these five words to be a continued source of amusement.

You see, when I was little the presence of a single bee sent me into a fit of hysterics, including frightened screams and flailing arms. Enjoying Summer picnics was nearly impossible, as without fail a persistent yellow jacket would hang around, looking for a taste of my chicken or a sip from my soda. I was a tomboy, without fear of the dark or snakes or spiders. But the bees, now they were my mortal enemy. But that would all change.

In the Spring of 2000, my husband and I were attending college in upstate NY. One afternoon his uncle called and made us an offer that would change the direction of our lives forever. He had grown weary of cold weather and familiar faces, and longed to go south and stay there. He offered us a most unexpected opportunity to buy him out of his beekeeping outfit at a price we just couldn't refuse.

After a great deal of discussion, consulting with my parents, and many prayers we decided that self-employment, and beekeeping, was indeed desirable. My husband assured me that I wouldn't need to be around the stinging bugs. Hands were shaken, money exchanged, and voila, we were beekeepers.

About a month into that first Summer my husband finally talked me into taking a look at his freshly refurbished honey house, located in a room of a large barn. I figured I would just stand outside the front door and peer in, avoiding actual contact with the objects of my deep phobia. I entered the poorly lit barn feeling pretty good about the prospect of facing down my fear. He opened up the door to his shop, and I felt my knees weaken when I saw millions of bees flying to and fro, filling the shop with their incessant, menacing buzzing. He tried to get me to enter, but my legs were filled with lead and my feet wouldn't move from the floor. I did, however, begin to relax the longer I stood there and watched, until he pointed out that the bees were flying all around me outside the door and above my head!

Panic rooted me to the floor as I imagined they could be entangled in my hair. My husband laughed when I stated this and explained that they had absolutely no interest in stinging.

He said they were lost bees, not defending a hive or their queen, just confused in their present dilemma. I couldn't really hear him over the pounding in my chest and the voice yelling in my head to **Get Out Now**.

I slowly made my way back outdoors, and for a time, I kept my

distance, and remained outside.

I knew that I was overreacting, and was amazed that my husband could handle, and even enjoy them.

As time went on, though, I learned many facts about the tiny creatures who provided for us without complaint. There was the dance to communicate the whereabouts of pollen and nectar sources. They were a miniature community, each with their own jobs – nurse bees who cared for the larvae; drones who mate; workers who brought in pollen, nectar, propolis and water and the Queen who was a mother to them all.

Whether my phobia began with a few stings as a child or some other way I couldn't say. On reflection however, I could not deny that the sole reason for my fear was the *idea* of being stung, because let's face it, that

hurts. But as I watched my husband time and again put his arm into the middle of a swarm to search for the queen, and remain unscathed my fears waned. And bit by bit, I found the more I learned, and watched, and understood, the less I feared.

Today, six years from the time of my first real exposure to these magnificent creatures, I am able to stand in the honey shop with bees flying around. I can walk up to hives to watch and assist my husband, and screams and panicked running are but a distant memory. I have learned to not fear them, but also to respect and yes, even to like them.

Isn't it true to life, that when you take the time to understand a thing, and you arm yourself with knowledge, you can eradicate the ignorance which ultimately leads to wrongful judgments, irrational fears and extreme prejudice? **BC**

Linnet McLaughlin has overcome her fear and assists her husband with their bees at their home in Ovid, NY.



SMALL SCALE QUEEN REARING

Non-Grafting Methods of Queen Rearing

Larry Connor

Last month we looked at using swarm cells as a quick way to produce queens in a hobby or sideline beekeeping operation. This time we will explore several relatively simple non-grafting methods to produce a moderate number of queen cells. These methods allow the beekeeper to time the age of the queen larvae, and narrow the window of variation in the age of the queens so produced. We will introduce the concept of cell starters and cell finishers, which are also a main part of commercial queen rearing. However, we will look at ways to use strong but otherwise ordinary colonies for cell production, and bypass the need to set up special colonies used just for cell production. Our focus will be to look for ways to produce high quality queen cells on a one time or as needed basis.

A few biological realities

In most colonies, the production of queen cells is segregated into two different biological patterns, or stimuli, that trigger behaviors in bees to produce queen cells. The exception occurs when a colony is naturally ready to produce swarm cells. Otherwise, the bees must receive certain stimuli to start queen cells. We will use at least two behaviors: the *emergency cell building response* as well as an *overabundance of nurse bees* seeking larvae to feed.

We use the emergency queenless response all bees have because they are sensitive to the absence of the queen and her brood when both are taken away from them. The bees immediately respond by evaluating any worker larvae given to them as potential queen candidates. This is usually done by putting a large number of young bees (those that have never foraged) into a confined hive body without a queen and without brood. The mother queen and all the brood are removed. After an hour or two of queenlessness, worker larvae are introduced into the mass of bees and they will select certain cells to begin raising queen bees. Without any open brood in the hive, the nurse bees will seek larvae to feed since they were just doing that in the hive before they were shaken into the new container. These bees are usually given food in the form of stored honey and pollen, and may be fed with a syrup container as well. Because the bees are confined, the syrup is also a source of water for the bees, which need hydration for proper royal jelly production as well as for cooling. Another source of water for confined bees is water soaked in a sponge. When bees are confined in a hive for cell starting the hives are called *cell starters* or *swarm boxes*.

Cell starters are good for starting a large number

of cells overnight, but they cannot complete what they have started. The nurse bees age, and the colony is not balanced with forager bees, so the cells are poorly built. For these reasons, another type of hive arrangement is used, one with a more normal hive arrangement, but set up to use another biological queen replacement behavior, the *supersedure response*. These we call *cell finishers* or *cell builders*. They work by establishing a queenless area in a strong hive where the queen is unable to walk and spread her pheromone. To do this open brood frames are moved above a queen excluder, and supplied abundant pollen and honey, and given sugar syrup as well. This attracts the nurse bees to crawl up through the excluder and feed the young larvae. These bees respond to the strong brood population and reduced queen pheromone by taking very good care of started queen cells that they are given. Interestingly, the cell finishers are not very successful cell starters because there is open brood present that reflects an existence of a strong queen and deters cell initiation. It is a fine line, but just remember that *finishers are poor at starting queen cells, and starters are poor at finishing them*.

There are many, many methods of starting and finishing cells, including some that use only one colony to do both duties. My objective is to outline some basics and give some key points about cell starting and finishing without getting into the heavy mental lifting involved in learning of all the different variations there are on the subject.

When to raise queens

It is possible to raise queen cells anytime you have brood. But I've never tried it in January or February here in Connecticut where I live and keep a few colonies. The limitations are always the drone supply and steady good weather for flying and mating, and those are almost always lacking for my bees in the Winter.

Queen rearing could start in April in New England if the drone supply is good. Rather I suggest you wait until May when the dandelions and fruit bloom are going to supply growth conditions for the colonies you use for cell starting and cell finishing, as well as provide abundant, vigorous bees for the nucleus mating colonies you need to make up for queen mating.

Queen Rearing Method Number 1 – Queen cells built on a partially cut comb

Most beekeepers can find good frames of newly emerged larvae in the Spring in the colonies they manage. They are often solid frames with larvae floating on

Strong colonies could be moved from a warmer location in the very early Spring into New England for queen production, and the colonies would undoubtedly contain adequate drones for mating. Drone holding colonies might also be brought in, or packages filled with a mixture of drones and queens shaken in the south and shipped for mating. Once they arrive, however, the beekeeper is still faced with two enormous challenges: one, keeping alive the drones that have been brought in, and two, having suitable weather for good mating flights by virgin queens and by drones.

beds of royal jelly. Since queens usually concentrate on one side of a frame at a time as they lay eggs, this provides uniform aging of the eggs, and thus the larvae found on the comb. Not every queen does this, I know.

It is just one small step, then, for the beekeeper to add a suitable frame for cell construction to the colony that is to be mother to the new queens. For reasons that will be clear in a minute, this frame should be built on thin natural wax foundation. No plastic, no wires, no reinforcement. Fasten three or four 3-inch wide starter strips that are cut at the end to form a triangular point. These must be held securely from the top bar with hot wax and a wood strip. When the colony is growing nicely, put the frame with starter strips into the hive and let the bees build it out and the queen lay into it. Put this frame directly in the middle of the brood nest. A quick check will tell you when the queen lays into it, and then you can time your queen rearing activities. The bees often build drone comb around the triangular points.

When the frame is filled with eggs that have hatched within the last 24 hours and are floating on royal jelly, you can start the process. Remove the frame from the hive and gently brush the bees off the comb.

Using a sharp knife, trim back the comb pieces to the original shape so you have three or four triangular edges that contain appropriate aged larvae for the cell starter colony. Queen cells will be produced along the edge of the comb, and you will be able to cut these cells off the frame for use in the mating nucleus.

Having watched the frame carefully, you should know the day you expect the larvae to be hatched (and fed) and ready for the cell starter. Several hours before you remove the frame and trim the triangular pieces in the comb, set up a cell starter as follows:

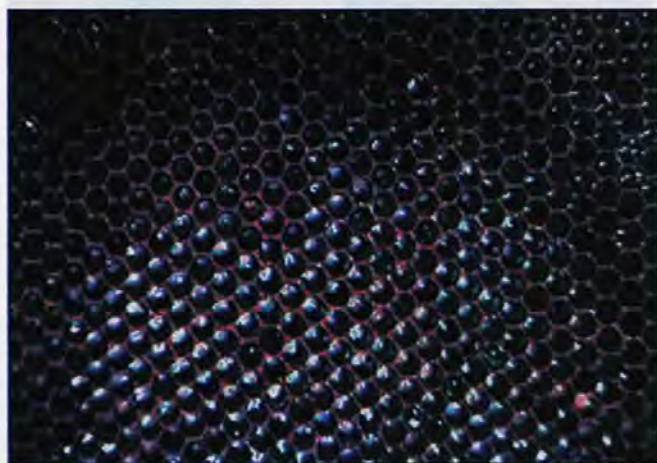
1. Assemble a starter box out of a five-frame nucleus with screen stapled to the bottom of the box to keep the bees inside and to allow ventilation. In the box put a frame of honey and pollen and a used but clean (soap free!) sponge dripping with water.

2. Go to a strong hive you have selected and locate the brood nest and find the queen. Set her aside so she is not accidentally added to the starter box. Shake all the bees on the brood frames into the starter box. Bees that fly back to the parent hive are older bees so don't worry about them. You only need the young nurse bees in the starter colony. You want two or four pounds of nurse bees in the starter, and a good strong colony in the Spring should have this.

3. Close up the starter (with bees, honey, pollen and water) and take a break - lunch or dinner even.



Cut thin beeswax foundation into three or four strips ending with triangular points. When you determine the breeder queen and colony are able, place the frame in the brood nest and let the bees draw out the comb, and the queen lay worker eggs into it. Gently check every day or two for progress. When the frame holds larvae that are one day old or younger, cut the comb back to the worker foundation, and place in the starter colony. (Adapted from *Queen Rearing and Bee Breeding* by Harry H. Laidlaw Jr., and Robert E. Page, Jr., published by Wicwas Press.)



Young larvae, floating on a bed of royal jelly. This is an older frame that shows the white royal jelly the larvae are floating on. Look for this on the new wax built from the starter strips.



Starter box. The text describes making a simpler version than this by stapling screen onto the bottom of a five-frame nucleus box. This starter is extended, and has screen sides for ventilation. Shake the young bees from a strong hive for use as a starter colony overnight. The bees are returned to the parent hive the next day when the started cells go to the cell finisher. (From *Queen Rearing and Bee Breeding* by Harry H. Laidlaw Jr., and Robert E. Page, published by Wicwas Press.)



In the Alley/Smith method of producing queen cells, a queen is stimulated to lay eggs into young comb. When the larvae are 24 hours old, the comb is cut into strips and hot-waxed onto a wooden bar that sets in a frame. One, two or three of these bars may be used depending on colony strength and seasonal buildup. Here the beekeeper has removed two cells and left one, allowing the bees to build cells with room in between. (Adapted from *Better Queens*, self-published by Jay Smith in 1949.)



About two days later the bees have reformed the worker cells into queen cells. Cells produced in this method are usually webbed together, and must be carefully cut apart for use in the mating nucleus. (Adapted from *Better Queens*, self-published by Jay Smith in 1949.)



Beekeeper Rollie Hannan Jr. working a cell builder/finisher in his queen yard. This colony consists of three deep hive bodies. A laying queen is active in the bottom two chambers, but is kept out of the top hive body by a queen excluder (note the unpainted wood strip). Rollie has moved three or four frames of open brood (hatched larvae) above the excluder. There are frames containing pollen and nectar next to the brood. When the cells are added, they are placed in the center of the open brood and the nurse bees, attracted to the open brood, crawl through the excluder and care for the queen cells as well as the worker brood. Note the migratory lid with a hole cut into the center. This allows Rollie to keep feeding the cell building without opening the colony.

Then go to the colony with the frame you will use for the queen cells, remove the bees and trim the wedges out to leave the triangular pieces containing worker bee larvae.

4. Bounce the starter box so the bees fall to the bottom of the box. Gently slip in the frame with the

queen cells. Close the colony. If the nighttime temperatures go below 50°F., put the starter in a protected shed or even a closed garage (after you get permission from you spouse). If temperatures are warm, place the bees on blocks so they will be able to ventilate through the screen on the bottom.

5. Anytime the next day you can move the started cells and put them into a cell finisher colony.

6. Make up a cell finisher by going to a strong hive and find the queen. Select four to six frames of open brood (eggs and larvae) and put this in a separate hive body over a queen excluder over the brood nest. Replace the missing brood frames with drawn empty comb. Make sure the queen is below the excluder! Above, add frames of honey and pollen.

7. Add the frame of started cells to the finisher colony. You will be able to see where the bees have reshaped the wax around the cells and have started to lavishly feed the larvae inside. But don't count your queens yet, since the finisher will probably not care for all of them.

8. Feed the finisher, either with a division board (frame) feeder, or with a jar on a migratory lid with a hole cut to hold the jar. Keep the feeder or jar filled until the cells are sealed.

9. Now it the time to mark your calendar. Most books say that queens take 16 days to develop, but I figure at least one of them will be precocious and will emerge on day 15. Here is your queen math lesson:

Egg to larva	3 days
Larva in parent hive	1 day
Night sent in starter	1 day
Total	5 Days

Subtract the days spent already from 15, giving you 10 days. Subtract one day from this, since you want to move the cells one day BEFORE they emerge. That gives you nine days. Go to your calendar and count nine days ahead and write MAKE NUCS - CELLS RIPE. Notice if you have anything planned that day, like your wedding or something, and plan to make the nucs up a day or two earlier, but not much more than that, or they will be in their own cell building business and mess up everybody's hard work so far.

10. On that ninth day, remove the frame with the queen cells. You may have a dozen or two cells in formation, but some will be side-by-side and impossible to separate. Count these as a single cell, and introduce them together into a nucleus. The queens will work this out in a time-honored battle of the fittest.

11. In your mating nuclei, add the queen cells you have cut from the frame using a very sharp knife. You will probably need to make space on the frame, just under the top bar, to make room for the cells. Cut out a portion of the comb and honey or brood, and gently but firmly affix the cells to the frame. Make sure the cells point downward into open space so the queen will be able to emerge safely.

12. The queen should emerge and mate, and may start laying eggs in about two weeks. Check the nuclei at that time for eggs and a new queen swollen with more. You may want to leave her there for a few days to lay up the nucleus, or the nucleus itself may become part of your increase plan for the season.



Typical cell frame with two cell bars in use. There is room for a third at the bottom. Rollie used the grafting method to produce these cells, but cells started using the Alley/Smith method would be handled in the same manner.

This method is often called the Miller method, after Dr. C.C. Miller.

Queen Rearing Method Number 2 – Queen cells on strips of comb

This method is nearly identical to the first, except you can expand the number of queen cells you produce by cutting strips of properly aged larvae and waxing them onto a cell bar.

1. Prepare a frame (or frames, if you want to produce queens from multiple queens) with thin foundation you can easily cut. Allow the bees to draw out the wax foundation and the queen to lay into it.
2. When you have day-old larvae floating on a bed of royal jelly, you can prepare them for the starter colony.
3. Carefully brush off all bees and place the frame on a flat surface. You need to select the best side, since only one side can provide larvae for your use.
4. With a sharp knife, cut horizontal strips of larvae, excising them from the frame.
5. Carefully remove the salvage side of the comb without damaging the larvae on the good side. Good luck, this can be delicate work.
6. Use melted beeswax on a small paint brush to fasten the strip onto the center of a cell bar that fits into a frame (this is Winter work you can do now, when it is snowing).
7. Once the strip is fastened and the wax cooled, carefully remove (or crush) two larvae and leave one. Use a large nail or ice pick. The cells should look like this when you are done; with O being a larva and X being a cell that is empty or you removed the larvae:

OXXOXXOXXOXXOXXOXXOXXOXXOXXO

This example leaves 10 larvae for cell production.

Jay Smith promoted using no more than five cells per bar as a means of producing top quality queens. Put no more than three of these cell bars with larvae into a single starter colony. Once you have experience with this system, you are free to adjust to your own experience base. I advise you remain conservative and produce fewer, high quality queens.

8. When the cells are ripe, carefully cut them off the

cell bar and use them in a cell finisher as described above.

In summary, we have discussed two relatively simple methods of making cell starters, cell finishers and making queens without transferring larvae using the grafting method. This method, as you may tell, has the following advantages:

1. It can be done by most beekeepers with existing equipment.
2. It does not require the transfer of larvae from the frame to a grafting cell.
3. It produces a moderate number of well raised queen cells that will produce excellent queens.
4. It is a conservative method of raising queens.

The main disadvantages are:

1. You are limited to a few dozen queens at a time.
2. You need to have the frames prepared in advance and be skilled at cutting delicate combs, something certain beekeepers have difficulty doing.

This method is often called the Alley Method, after Henry Alley. It is also called the Smith method, after Jay Smith.

Finally, there are queen-rearing systems, like the Jenter system, which require special purchases and equipment. While I have personally never used any of these systems, there is no reason why you shouldn't spend YOUR money and give it a try! But try one of the above and see if it works for you. **BC**

Larry Connor is owner of Wicwas press, New Haven, CT where he edits and publishes books on bees and beekeeping – LJConnor@aol.com or www.wicwas.com.



Jewels For The Queen

Sue Cobey

A New Ruby Hook Comes Online

The technique of instrumental insemination (II) enables controlled mating of the honey bee. It is a critical component of genetic research and is essential for the development and maintenance of selected stocks with economically valued traits. Today there are choices and sophistication in II equipment design. The basic procedure has not changed significantly since its development, although improvements and innovations in instrumentation have made it highly repeatable and easier to learn and use.

A critical step in the insemination procedure is lifting the sting structure of the queen to expose the vaginal cavity. The type of tool used to manipulate the sting is an aspect of the procedure that has undergone an evolution of change. Today there are several choices in technique. The new ruby jewel sting hook offers the inseminator a creative new option.

The New Ruby Jewel Sting Hook

A new sting hook design is the concept of Mark Jones, a hobby beekeeper and jeweler by profession. He began to "tinker" in his shop after viewing the specialized equipment available and participating in one of my insemination classes at Ohio State University. The result is the ruby jewel sting hook.

The new sting hook has a perforated ruby jewel insert. The tiny ruby ring of the hook is threaded to lift the sting during the insemination procedure. The design is based upon the perforated sting hook. With the appearance of fine jewelry, the ruby hook offers several practical advantages over the standard perforated hook.

The ruby jewel is transparent, allowing the sting to be seen through the ruby, beneath the hook. The shape of the ruby, beveled on the underside of the jewel, guides the sting into the hole to more easily thread the sting. These two features make the ruby sting hook easier to use, especially for those just learning the procedure.

Second to diamond, the ruby has a hardness rating of nine, giving it high durability. Over time, wear and the use of a fine cleaning wire can enlarge the hole of the standard perforated hook. Dried venom tends to clog the hole of the perforated hook with usage. A slight increase in the size of the hook hole, due



Insemination with the jewel hook.

to cleaning, can cause slippage of the sting during the insemination procedure. The hardness of the ruby maintains the specific 0.02 mm hole size necessary to securely grip the sting.

The inset ruby ring is precisely and securely fitted in the hook, in the manner used to set stones in fine jewelry. The setting of the ruby eliminates the need for glue, which could be problematic with repeated exposure to saline and alcohol.

The original hook design was made with 14K white gold. The hook is being produced using German silver. These gold and silver alloys increase the hardness of the metal, compared to pure gold or silver. These metals are non-corrosive, will not rust, and can be cleaned with alcohol.

Historical Discoveries

In the 1920s Dr. Lloyd Watson was the first to successfully demonstrate "instrumental insemination" as he named it. He used a pair of hand-held forceps to open the queen's sting chamber (Watson 1927). W.J. Nolan modified Watson's technique, using a ventral hook and a wire clip to hold the queen open (Nolan 1932).

During the development of the technique, from the 1920s into the 40s, the backup of semen was problematic. The unknown role of the valvifold was a major and historically frustrating obstacle. The valvifold is an invaginated flap of tissue covering the oviduct. To properly inseminate the queen, semen must be delivered directly into the median oviduct. From there it migrates into the spermatheca, the sperm storage organ.

Another obstacle to the success of artificial insemination was the inadequate semen dosage given. At the time it was unknown that the queen mates with many drones. The early inseminations produced queens that initially laid worker brood, but soon became drone layers. Most of the semen, which mistakenly appeared to enter the oviduct, went into the pouches on the sides of the sting chamber. Semen leakage was problematic, blocked by the valvifold (Laidlaw 1987).

The insemination procedure was also very labor intensive and inefficient. At the time, inseminations required several small amounts of semen to be given

intermittently. Blocked by the valvofold, injection of semen would take hours and result in high mortality of queens. Today the process requires only seconds and is as successful as natural mating.

In the 1940s, Harry Laidlaw's breakthrough discovery identified and described the function of the valvofold (Laidlaw 1944). He designed a sting hook to pull the sting over the vaginal opening and a probe to lift the valvofold ventrally. About this same time queens were observed to mate with multiple drones, therefore the semen dosage was increased. The technique was now repeatable and queen performance more successful.

Evolution of Sting Hook Design

Harry Laidlaw and Otto Mackensen designed the classic spoon shaped type of sting hooks. These cup and lift the sting structure. This hook design soon became a standard worldwide, from the 1950s through the 1980s.

Positioning of the sting during the insemination procedure determines the ease of bypassing the valvofold. Lifting the sting stretches the tissue folds and deepens the vaginal cavity. Improper positioning can make the injection of semen frustrating, resulting in the backup of semen.

If not carefully and properly positioned, the classic sting hook sometimes has a tendency to slip or get in the way of the syringe tip. This is more problematic when virgin queens have been confined to cages and have not defecated. Improvements were made by Peter Schley, who modified the shape of the sting hook, widening the flare of the spoon to minimize slippage. Franz Schafferhans designed a sting hook with a barb to more securely hold the sting structure (Schafferhans 1987, Schley 1988).

Based on Gudrun Koeniger's observations of the natural mating process, a way to more naturally position the sting for instrumental insemination was sought (Koeniger 1984). The perforated sting hook was designed to thread and lift the sting. During use of this hook, the vaginal cavity is deepened, increasing the ease of bypassing the valvofold and the injection of semen (Schley 1988). In the 1980's and 1990's the perforated sting hook gained popularity and essentially replaced use of the classic sting hook.

In the mid 1990s, use of forceps came back into vogue, bringing the evolution of sting hook designs full circle. The use of a fine pair of forceps, of the 1920s and 30s, is now used with the simplified instrument designs ((Kuhnert and Laidlaw 1994, Cobey and Latshaw 1998). The forceps are hand held and used to grasp and lift the sting in preparation for insemination.

An innovative sting hook design, based on the use of forceps, is the pressure grip forceps designed by Peter Schley. A fine pair of forceps is mounted on a handle held and manipulated in the instrument. Push button control on the handle opens and closes the forceps (Schley 1995). The need for free hand manipulation is eliminated.

Of the various sting hook designs, all can produce the same result, based on the skill of the inseminator. Positioning of the sting determines the ease of bypassing the valvofold. Improper positioning can re-

sult in the backup of semen and frustration.

The use of perforated hooks and forceps to manipulate the sting structure of the queen are an improvement. These lift the sting and deepen the vaginal cavity in a manner that increases the efficiency and ease of bypassing the valvofold and the injection of semen. Anatomical differences between queens are less pronounced. The choice of sting manipulating tools offers flexibility in techniques and is often based on personal preference.

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

Cobey, S., and J. Latshaw. 1998. *The Latshaw Instrument, A Made In the U.S., Instrumental Insemination Apparatus*. Amer. Bee Jour. 138:382-384.

Koeniger, G. 1984. *Funktionsmorphologische Befunde bei der Kopulation de honigbiene (Apis mellifera L.)* Apidologie 15:189-204.

Kuhnert, M.E., and H.H. Laidlaw. 1994. *Simplified apparatus for instrumental insemination of queen bees with the flexible insemination technique*. Apidologie 25:144-154.

Laidlaw, H.H. 1944. *Artificial insemination of the queen bee (Apis mellifera L.). Morphological basis and results*. Jour. Morph. 74:429-465.

Laidlaw, H.H. 1987. *Instrumental Insemination of honey bee queens: Its origin and development*. Bee World 68:17-38, 71-88.

Nolan, W.J. 1932. *Breeding the honey bee under controlled conditions*. USDA Tech. Bull 326.

Schafferhans, F. 1989. *Instrumentelle Besamung der Bienenkonigen-Ein Beitrag zur Verbesserung der Technik I. in Proc. XXIst International Apimondia Congress*. Apimondia Pub. House, Warsaw, Poland.

Schley, P. 1988. *An important improvement in insemination technique of queen honey bees*. Amer. Bee Jour 128 282-283

Schley, P. 1995. *Neue Druck-Stachelklemme für Besamungsgerät*. Biene 5:40.

Watson, L.R. 1927. *Controlled mating in the honey bee*. Rept. State Apiarist, Iowa.

Package Bees

Italian & Carniolan Queens
Sorry, no shipping

Prices are currently unavailable, but will be in the next ad. Call for details on drop-off points along my route.

Phil Kurkoski Apiaries

2472 Hidden Valley Lane
Stillwater, MN 55082
pkurkoski@comcast.net
(651) 439-8051 (H)
(651) 747-7525 (C)

Flottum
Kim
PICTURES FROM AN EXHIBITION
Vendors - Apimondia 2005



Left. You're looking at the back of the registration area. If you've ever run a meeting you appreciate the scale of this. Right. These two photos taken from above the vendor area. It really does vanish in the mist.



Every country has an equipment manufacturer, and stainless was everywhere. It's interesting to note how different environments and cultures solve similar problems.



Sara Kornfield, USA Honey Queen was there, and Jeremy Burbridge of Northern Bee Books, and *Bee Culture* shared a stand. NBB has the greatest selection of Bee titles available, I think.





Representatives from many countries were present extolling the virtues of the many varieties of honey produced in their regions. Here, Portugal and Bulgaria.



Both Germany and France import honey, and sell honey . . .



Kashmir displayed their unique retail packs, ready to export. But this company deals with them all.

Eurofins, an independant honey analyzer was a popular booth, especially after the drubbing the honey police gave most honey produced and sent to the EU. U.S. honey was singled out as unacctpable because of the lack of testing. It appears this is changing, however, as some U.S. packers are getting serious about contamination.



From Russia With Love. This charming young lady explained, probably hundreds of times, the niche market honey she was selling. All wild, (i.e. raised in tree-like hives, untreated and very pure). She had liquid honey, comb chunk honey, and cut-comb honey. And not much of it so you better hurry.



China had several reps present, also, looking to sell.



Sellers of Bee Supplies were evident in force, some well known, like Thorne's, from the UK, Pierco from the U.S. The company from Argentina, however, was all things to all people. They sold supplies, bought, sold and exported honey, and would advise on management. Thomas from France was there, and CC Pollen, too, who buys and sells pollen, but also has a whole line of creams, balms and glosses nobody knows about. Paul Younger, with his outside-the-box new smoker was there, but had to find out how to adapt EU Butane tanks to his Propane machine. He did and it works.



Australia, site of the 2007 Conference gave away lots of goodies, and sponsored lots of events. They promise an outstanding conference in 2007. See the Calendar for more info.



The National Honey Board's contingent, and Abilles & Fleurs, from France were both educational and helpful.



A familiar face and long-time friend, Brian Sherriff had a booth (and a new style suit) . . .



. . . but there were as many kinds of suits as there were sellers.



It did my heart good to see that many suppliers are selling fondant in easy-to-apply bags. Cut an X, lay on top bars – done.

These are the fine folks that took advantage of our *Bee Culture* organized tour. This turned out to be a great idea. It was a real treat to travel and experience this with other beekeepers and friends. Who knows, if we can get 75 people to commit, maybe we can do Australia for our next *Bee Culture* road trip. Thanks to all of you who came along, we hope you had as much fun as we did and learned a little about beekeeping around the world.



THE BEEHAVER BOGGLER

SWARM CONTROL

Mentors are a lighthouse on the beekeeping voyage.

Any group of beekeepers will include a Beehaver. This one who HAS bees, but knows very little about KEEPING bees. He has a learn-as-you-go approach. As he bumbles his way toward being a competent beekeeper, he learns mostly from experience. In the process, those who follow his exploits, both humorous and sometimes unfortunate, learn too. Fortunately our Beehaver has been introduced to one of the mentors in the club, Greg Goodheart.

An unusually warm Spring has the willows putting on an early floral display. The Beehaver strides into his backyard. He has a cup of coffee in one hand, and a swarm prevention list in the other. When Greg gave him the Swarm Prevention list two weeks ago, he advised, "Do it soon." The two hives in his backyard and the three hives, located at a friend's outyard, were purchased last Fall. With his list in hand he is about to open the hives for the first time.

Swarm Prevention List

- Remove any queen cups or developing queen cells, usually found at bottom of frames
- Make sure bees have plenty of room, especially in the brood chamber
- Provide afternoon shade for the hives
- Reverse brood boxes if brood nest cannot be expanded due to brood or honey occupying available brood space
- Look for bees clustering at the landing board even when it is cool and not particularly overcrowded
- If possible, look for painted mark on the queen's thorax

The Beehaver starts to understand Greg's unheeded warning "Best to start with just one or two small hives. Learn to walk before you run." He had been thinking about getting bees for some time when a grandfatherly beekeeper offered him a deal he could not refuse. He did his homework. He read an old pamphlet on keeping bees. It looked so simple. "Watch for foul-brood and give them room to grow. Harvest lots of honey. Easy money. Interesting and fun too." it added.

As the Beehaver tilts his head back to enjoy the last few drops of his coffee, he focuses on an oblong object six feet up in a pine tree. He's been swarmed! Recalling a video, he knows capturing the swarm should be easy. He rounds up a few needed supplies: sturdy cardboard box, tape, ladder, hand pruners and an empty hive with foundation frames.

The swarm is not high and is near the end of a small branch. He prunes away the small branches projecting beyond the swarm. Getting a firm grip on the

branch close to the bottom of the swarm with one hand, he cuts the branch off the tree with the other. Carefully, he climbs down the ladder then places the branch and swarm into the cardboard box. After taping the box shut, he stores it in the shade. The swarm is now ready to be taken to the outyard where it will be transferred to a new hive.

Using Greg's check list, the Beehaver goes through his hive to figure out which of the two swarmed. Having two hives side by side makes it easier for him to compare. The first hive has a good population and remains gentle; at least until a frame slips from his glove. He can see the advantage of gaining enough confidence and experience to eventually work without gloves. At the bottom of one of the brood frames he finds five queen cups. A small amount of surgery with a hive tool and they are gone. Finally he adds a queen excluder to the top of the stack and then the first honey super.

Going through the second hive he discovers lots of developing queen cells with visible larva, a recently capped over queen cell, no eggs or young worker larva and less traffic on the landing board. This hive probably swarmed yesterday while he was at work. It was the first sunny day after two days of rainy weather. The population of the second hive is roughly half the other hive. He leaves one capped queen cell containing the replacement queen, and puts the hive back together adding a queen excluder and a honey super.

The truck is packed, including the boxed swarm, when the Beehaver gets a call from the outyard owner. He doesn't sound happy. "Hey, Beehaver, your bees are about four feet up in my best olive tree. I'm afraid they are going to break a branch. You'd better get over here!"

The boxed swarm was humming at first, but it seems like the vibration from the truck quieted the bees down. At the outyard, the owner is quick to point out the swarm - a good 12, not four feet off the ground. Cutting the branch off is not an option. As he walks toward his truck, he notices yet another swarm! This one is on the ground at the base of a tree. At this point the Beehaver is thinking about the wisdom of just starting with two hives

Feeling a little overwhelmed the Beehaver calls Greg asking for a helping hand. While waiting for Greg, he prepares to put the first swarm into the new box. He positions a screened bottom board on top of a foundation of four cinder blocks. Next he places a new brood box, with a few frames removed to create space for the new swarm, on the screened bottom board. He intends to place the branch with adhering bees into the space where the frames were temporarily removed. A sharp shake of the branch should dislodge the bees. He opens

the cardboard box to remove the swarm, only to find they are ALL DEAD!

How can this be? The cardboard box was originally used for medical supplies: nothing toxic there. The box was kept in the shade. The swarm could not run out of food because when the bees swarm, they have a couple of day's worth of honey in their stomachs. As the disheartened Beehaver looks through the remains of the swarm, he finds the dead queen. The red paint mark on her thorax made it semi-easy to find her.

He now decides to try to get the swarm out of the tree before they leave. This swarm capture is more challenging because he can not cut the branch per the owner's wishes. Getting the box as close as he can to the swarm, he gives the branch a good shake. Most of the bees fall into the box, some loft into the air, some stay on the branch, and lots of them land on his new bee suit. These are not happy bees. The Beehaver transfers the bees from the cardboard box into their new home.

About the time Greg's truck comes crunching up the gravel drive way, the Beehaver hears some loud buzzing coming from the new hive. The bees are leaving their new home and are heading right back to the same place in the tree again. The Beehaver climbs back to the swarm. This time, armed with Greg's advice, he takes an empty plastic container as well as a cardboard box. Using the container he scoops the bees into the box. Eventually most of them are safely contained. He wedges the partially open box into a nearby fork in the tree. He climbs down and receives another pearl from Greg, "If you have the queen in the box this time, all the bees that did not get scooped will start walking and flying into the box." Sure enough, that is exactly what happened. This time when the swarm was transferred to the new hive they stayed there.

Now the Beehaver and Greg turn to the swarm on the ground. The cardboard box with a hole cut out of it is placed at the edge of the swarm. Greg gently starts smoking the side of the swarm furthest from the box. It takes a few minutes for the bees to start but once they do, they look like a miniature army rushing into the box. Greg advises the Beehaver that it would be best to return the swarm to the original hive. Since this queen is marked with red on her thorax, she is easily spotted and removed from the swarm. "Better to eliminate this older queen and keep a younger one that is in the hive that swarmed," Greg says.

Greg walks around the hives. He stops at the middle one, puts his ear to the back of the hive for a few minutes, and says "This is the one that swarmed, at least twice." He goes through the other two hives and finds that there are no queen cells. Greg goes back to the middle hive and removes all the queen cells. He adds a queen excluder and a honey super to each of the hives, and he is done. The Beehaver is impressed and asks Greg to help him understand the day's experience by answering some questions.

Why did the swarm die?

How old was the red marked queen?

Why did the second swarm leave the box and go back to the tree?

How did Greg pick the hive that swarmed?

As the Beehaver drives back home, he thinks about

Greg's answers, and reflects upon his first big day with the bees. One of the things he learned was the old pamphlet he read was correct.

Beekeeping is interesting and fun. He has a long way to go but he has learned that mentors are a light house in the beekeeping voyage. This is just the beginning of the journey.

Answers to the Beehaver Beggars

Why did the swarm die?

Bees have many of the same needs as people. Air is one. The cardboard box was completely sealed and did not allow the bees to breathe. A section of window screen roughly four inch by four inches should have been attached over a hole cut out of the side of the box.

How old was the red marked queen?

A color marked queen indicates that the queen was probably produced and marked by a commercial queen producer. The color indicates the age of the queen. The Beehaver's queen was marked using the five year sequential color system:

<u>Color:</u>	<u>Year ends in</u>
White:	1 or 6
Yellow:	2 or 7
Red:	3 or 8
Green:	4 or 9
Blue:	5 or 0

An easy way to remember this is the acronym: What, you raise green bees!

As far as the age of the dead queen, she was raised in 2003. Young and vigorous queens are less likely to swarm; that is why Greg advised the Beehaver, "Better to eliminate this older queen and keep a younger one in the hive that swarmed."

Why did the second swarm leave the box and go back to the tree?

The swarm went back to the original place in the tree because the queen was not captured. When the Beehaver made the second attempt to capture the swarm using the plastic container, he successfully captured the queen. Observing the bees' behavior will tell you where the queen is.

How did Greg pick the hive that swarmed?

There were four indicators:

1. Fewer bees leaving the hive;
2. Many of the bees, from the now queenless swarm, were returning to the landing board and the front of the hive;
3. Many the returning bees were exposing their nasonov gland, a scent gland that helps disorganized bees get back together;
4. When Greg put his ear to the back of the hive, he could hear piping, a sequence of loud, shrill sounds made by newly emerged queens. Piping, somewhat like Morse code, sounds like a long tone followed by shorter tones. **BC**

Morris Ostrofsky is a freelance writer, on his journey to beekeeping, hailing from Eugene, Oregon.

Honey Plants

Connie Krochmal

Creeping sow thistle
(*Sonchus arvensis*)
USDA photo



A Multitude Of Invasive Thistles

There are so many kinds of thistles it can be confusing. The true thistles are prickly members of the daisy or Composite family. However, some other spiny plants are also known as thistles. Despite their differences, these invasive species share some common traits, including the fact they are considered noxious weeds in many states. This month, we'll look at the sow thistles, the prickly Russian thistle, and some related species, all of which are eagerly sought by bees for nectar and pollen.

SOW THISTLES (*Sonchus* spp.)

In the daisy family, this group features annuals and perennials. These plants yield a bitter, milky sap, giving them another of their common names – milk thistle.

Unlike most daisies, these flower heads contain only ray flowers, which look like petals. They contain both male and female organs.

Creeping sow thistle (*Sonchus arvensis*)

This perennial grows in nearly all states with the exceptions of Hawaii, Arizona, Oklahoma, Arkansas, Alabama, Georgia, South Carolina, and Florida.

Creeping sow thistle is classified as a noxious weed in 13 states. Native to Eurasia, this has been in America for nearly two centuries. No one seems to know how it got here.

This species has a number of other common names. Among these are marsh thistle, swine thistle, and gutweed.

Habitat

Creeping sow thistle grows in all climates. It prefers humid conditions. Disliking acidic and clay soils, this thrives in every other soil type and pH. It particularly likes moist and wet sites, such as wet meadows, shores, and along waterways. This also occurs in cultivated fields, waste places, disturbed areas, lawns, and woods.

Description

This plant develops from a horizontal root, reaching nine feet in length. Creeping sow thistle grows from ½ to six feet in height. With a smooth, stout, hollow stem, it may develop branches towards the top.

Alternately arranged, the leaves have bristles along the edges. Towards the top of the stem, the dandelion-like foliage tends to be rather sparse. The leaves range considerably in size from two to 16 inches in length. The lower ones have larger, deeper lobes. Teeth appear along the margins of the upper foliage.

This perennial begins blooming the second year, mostly from June through September. The vivid yellow blossoms, up to two inches across, emerge in flat topped clusters. Opening with the sun, they close around noon. The branched flower stalks are glandular and hairy. Yellow hairs can be seen on the bracts and stalks. The fluffy, white seed heads are similar to those of the dandelion.

How Creeping Sow Thistle Spreads

With its vigorous growth habit, creeping sow thistle spreads easily by seeds and roots. Each year, this perennial can produce around 4000 seeds, remaining viable for a number of years. Tufts of hairs on the seeds help them blow to new locations. In addition, these seeds can float in water and stick to animal fur. Contaminated agricultural seed and hay also play a role in their distribution.

Creeping sow thistle is named for its extensively creeping roots. These continue to increase in size and spread into the surrounding soil. During this process, they produce new shoots. Pieces of the roots can be transported to new sites by agricultural equipment.

The Impact of Creeping Sow Thistle

In some areas, creeping sow thistle poses real problems. When present in large numbers, the plants reduce crop yields. The cost of herbicides can become burdensome. All of the sow thistles serve as alternate hosts for some serious diseases that affect field crops and native species.

Control of Creeping Sow Thistle

With this perennial, several control measures are appropriate. Some herbicides seem more effective than others. Usually, chemicals are com-

bined with other control measures, such as tilling or mowing. Grazing can also play a role. In general, biological control has not been helpful.

Related Species

Several related species of sow thistle are known to be invasive. Found in all states, they were originally native to Europe. These sow thistles will be more numerous during the cooler months. Even though they're normally annuals, these species can be longer lived. Their flower heads are slightly smaller than those of creeping sow thistle, less than an inch in diameter.

Generally, these relatives grow in similar kinds of habitats. Among these are waste places, roadsides, gardens, cultivated fields, disturbed sites, and fencerows.

Annual sow thistle (*Sonchus oleraceus*)

This occurs from sea level to over 7,500 feet elevation. Growing three to six feet in height, annual sow thistle has very few branches. Its stems tend to be mostly smooth. While the basal leaves taper to a point, the upper ones clasp the stem.

Though the blossoms of annual sow thistle resemble those of the other species, these are less conspicuous. They are lighter in color, and appear in open panicles.

To prevent annual sow thistle seeds from germinating, cultivate the soil before planting crops.

Annual sow thistle has a host of other common names, including colewort, hare's lettuce, milk thistle, and milk tassel.

Spiny sow thistle (*Sonchus asper*)

Initially observed in the U.S. during the 1800s, this annual adapts well to all growing conditions. Spiny sow thistle can withstand frost. This is adapted to partial shade. The only thing that will prevent this plant from thriving is lack of moisture.

It is easy to distinguish spiny sow thistle from its relatives. This one has a lobe at the base of each leaf. It blooms throughout the Summer.

Spiny sow thistle can produce over 25,000 seeds per plant, which are spread by the wind. These remain viable for around eight years. When buried too deeply in the soil, they fail to germinate.

This is also known as sharp fringed sow thistle, and spiny leaved sow thistle.

The Sow Thistles' Status as Bee Plants

In several regions of the U.S., sow thistles have become important bee plants. This is true in the Southeast and West. Though these species don't always produce huge honey crops, surpluses are possible. This honey has a pleasing flavor, a little stronger than that of mild ones like clover.

RUSSIAN THISTLES (*Salsola spp.*)

These are members of the goosefoot family. The flowers bear male and female parts.

Prickly Russian thistle (*Salsola kali*)

This species occurs in all states except Alaska. Originally from Eurasia, prickly Russian thistle was introduced accidentally from Russia around 1875.

This annual has numerous other common names, including saltwort, tumbleweed, and prickly saltwort. Once used in making glass, this is also called glasswort.

Habitat

Prickly Russian thistle commonly grows in overgrazed pastures, abandoned and cultivated fields, waste places, disturbed soils, and along ditches and roadsides. Adapted to every climate, it tolerates poor, dry soil. This prefers alkaline conditions. Nonetheless, it will grow at any pH.



Spiny sow thistle (*Sonchus asper*)
USDA photo

Description

Bristly and hairy, prickly Russian thistle develops as a rounded clump. It reaches ½ to four feet in height with almost an equal spread. When young, the plants are fleshy. The spiny, rigid, bushy stems have numerous, dense branches. On older plants, reddish stripes can be seen along the stems. Prickly Russian thistle turns red during the Fall, giving it another of its common names – burning bush.

The hairy, blue-green foliage has sharp, spiny tips. The leaves are alternate. Reaching 2½ inches in length, they're only one-tenth of an inch wide. While the upper leaves are awl-like, the lower ones resemble thread.

Prickly Russian thistle blooms any time from Summer through Autumn. Small and inconspicuous, the bristly, rigid, greenish blossoms open singly in the leaf axils. Several bracts enclose the bases of the blooms. Lacking petals, these flowers have five petal-like sepals. The centers are either pink or red.

How Prickly Russian Thistle Spreads

Among invasive weeds, prickly Russian thistle is a champion. It produces around 200,000 seeds per plant. These remain viable for several years.

Gigantic clusters of the dried plants tumble in the wind, dropping seeds wherever they go. That is why it came to be known as tumbleweed. Some of this plant's other common

names refer to this annoying habit. Among these are wind witch, Russian tumbleweed, and tumbling weed.

The seeds of prickly Russian thistle are just amazing. Nothing except lack of moisture seems to stop them. They can germinate at almost any temperature – even below freezing. When the seeds are buried several inches in the soil, the fast growing seedlings can still rise to the surface.

The Impact of Prickly Russian Thistle

Wherever it occurs, prickly Russian thistle is considered a major invasive species. In the West, the plants disrupt the flow of water by clogging irrigation ditches. Clusters of tumbleweed create traffic hazards. All of the Russian thistles play a role in spreading some serious diseases that affect various vegetables and field crops.

Control of Prickly Russian Thistle and its Relatives

So far as control is concerned, prevention is the best way of dealing with this species and its relatives. Begin control early before the plants get established. Mowing works for young plants so long as this is done before they set seed. Tilling helps to some degree.

Herbicides, which give good control, should be applied when the plants are lush. Burning should not be attempted since the seeds are fire resistant. In California, several species of moths have been used successfully.

Related Species

Prickly Russian thistle has several relatives that are also invasive species. Two of these are found only in California.

Barbwire Russian thistle (*Salsola paulensis*)

This is also known as Russian thistle, and tumble thistle. It grows over much of the West. Although it isn't clear how barbwire Russian thistle was introduced to America, this species was initially observed during the 1960s. Originally from Eurasia, it grows to 6000 feet elevation. This annual is usually seen during the warmer months.

Barbwire Russian thistle fea-

Russian thistles (*Salsola* spp.) USDA photo



tures a thick stem. The lower branches can be almost prostrate. About two feet in height, this plant is generally somewhat wider than tall. The yellow-green, spiny tipped foliage can be hairy. Fleshy textured, the leaves tend to be stiff and thick. The foliage curves away from the stem.

This species blooms from early Summer through the Autumn several weeks before prickly Russian thistle. These blossoms have stiff sepals. There are bracts around the flowers.

Spineless Russian thistle (*Salsola collina*)

This species occurs over much of the Midwest. Introduced from Eurasia, spineless Russian thistle was first observed in the U.S in the 1950s. This annual achieves its best growth in sandy and loamy soils. Adapted to all moisture levels, it also tolerates salt. This requires full sun. Spineless thistle grows in gardens and cultivated fields.

This species reaches over three feet in height. The green striped stems can be curved. Its fleshy, pliable leaves have a leathery texture. At the tips of the foliage are soft bristles. The blooms appear in the leaf axils. Large and fleshy, the flower bracts usually have bristly tips.

The seeds of spineless thistle aren't as long-lived as those of its relatives.

Species Limited to California

Opposite leaf Russian thistle (*Salsola soda*)

This annual grows in California during the summer months. It has smooth, slender, mostly erect stems. Opposite leaf Russian thistle is also known as glasswort.

Shrubby Russian thistle (*Salsola vermiculata*)

This species is limited to San Obispo County, California. Its other common names include wormleaf salsola and Mediterranean saltwort. While its relatives are annuals, shrubby Russian thistle is a perennial. Originally native to the Mediterranean, it was introduced to California during the 1960s on an experimental basis as a potential forage crop. The plants escaped and naturalized after the experiments were discontinued.

The Russian Thistles' Status as Bee Plants

The prickly Russian thistle and all of its relatives bring good crops of nectar and pollen. These are most helpful to beekeepers in the Plains, Southwest, and West. Unlike some bee plants, these cold-tolerant species can produce a good surplus of honey after frost has hit.

Though these thistle-like plants may be considered invasive weeds, bees visit them on a regular basis to collect ample crops of nectar and pollen. **BC**

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


CHORES

Lots to do during this very short month.

Ann Harman

February is a strange month. I have no idea why it was chosen to be shorter than the rest of the months. Perhaps it is because February belongs to Winter and to Spring. A few warm days fool some trees to begin blooming to make bees happy. Those days are followed by a blizzard showing the trees that blooming was a stupid idea.


However bees are all geared up for spring. The queen is laying; the worker bees are working. What are you doing? What happened to all that October enthusiasm for ordering equipment, refurbishing comb, and mending that rip in your veil? In some parts of the country the bees have traveled to pollination sites. But across most of the country beekeepers are realizing that they are not really ready for Spring.



The 2006 equipment catalogs should be in your hands now. Did you neglect getting your name on their mailing lists? New products appear each year – some really great, others perhaps not so necessary but might be nice to have. If that blizzard has you confined to the TV, turn it off for a while and look through those catalogs. I have noticed quite a selection of improved feeders available. And bottom boards seem to be redesigned, all claiming to be better than ever. Will one of them suit your needs?


Take a good look at the new items. The equipment manufacturers really do think about beekeeper needs. And they really do listen to our suggestions, complaints and our thanks. Have you ever told an equipment supplier that you really like one of their products? All too often we are profuse with complaints. Complaints are usually not constructive criticism; neither are they suggestions for improvement. This year why not take a moment (you can do it e-mail if it saves you

time) and tell an equipment supplier that you appreciate a particular piece of equipment and find it useful. At the same time you could give an idea for something that you have found handy.




One thing I have noted in photos of beeyards is the lack of paint on hives. Granted, some beeyards look wonderful and reflect the care given to the equipment and the bees. But I see many boxes in sad need of paint. If you happen to have cypress equipment I know what you are going to say. But not everyone has cypress boxes. The usual wood is pine. It's a nice wood, light weight and will give many years of service if you take care of it.

Look at your stored equipment. Then take a walk on the next nice day and look at your hives. Make a note about the quantity of paint you will need. Do the hives have to be white? Perhaps, if you live in Arizona. But if you live in Indiana or Pennsylvania or Oregon or anywhere else you can paint them any color you wish. Paint stores always have some mixed-up-wrong paint for sale cheap. The bees do not mind if they live in a multicolored world. Actually a mixture of colors probably helps them find home. While you are at the paint shop buy a scraper to get rid of that peeling paint.




When you have had a good look at your brood boxes and supers you probably will find some with rotten corners. That's where you've jabbed the hive tool too many times. Paint would have helped preserve those corners and also prevented rot from spreading. It's time to think about repairs. Unfortunately just nailing a strip of wood over the rotten place is not going to help. Rain will dribble between the box and the repair and may actually

make the rotten place worse. Yes, bees do defend the holes you have ignored but as soon as there is a dearth of nectar those bees are going to have trouble defending all those holes against robbers. Paint, caulking, and glue need to be in your repair kit. Wouldn't it be nice if someone invented Beehive Bondo?




Now it's time to dump your bee bucket out on the floor. Oops – so there's where that missing peanut butter sandwich went. Sift the useful items from the debris and see what you are missing. Got enough duct tape? Enough hive tools? No hive tools? That means a trip to the truck. Remember, any loose change you find under the seat, on the dash and in the glove compartment will be a bonus. The hive tools you find should be enough to start out the year. Now that the weeds are long dead and mashed down by rain and snow you might find a hive tool or two in the beeyard. Go out and look.



Do you use coveralls? Did you wash them last Fall? If not, do that right now! You do not want dried venom left on coveralls. Dried venom, inhaled, can lead to sting allergy. Washing coveralls is not a job to be put off until later. Keep those coveralls washed all through beekeeping season.

While you are doing something with those coveralls, have you mended the rip in your veil? If not, you'll be trying to look around a piece of duct tape during the beekeeping season.



Have you thought about using a beekeeping calendar this year? I certainly expect that you removed the beekeeping calendar from your December issue of *Bee Culture* and have admired the January photo and are now appreciating the February photo. While that snowstorm continues outside sit down with that calendar and write in important bee management items for your particular area. If you are wise as the year goes on you will note down the times nectar plants start to bloom as well as other notes helpful to your beekeeping. This calendar can now become an important part of your record keeping. Besides the photos are too pretty to be tossed

out at the end of next December.

You can use that calendar for teaching. This year you can fill in what happens in general in your region. But next year the 2006 calendar can become a nice subject for bee management in your local short course. The new beekeepers will learn the value of record keeping as well as what happens when.

Now that your boxes are all repaired and painted it is time to take a serious look at the comb in those boxes. Here is a quick task for a day of reasonable weather. Go out to the beeyard and see if you have any dead colonies. Their discovery is always a sad moment but discovery now gives you a chance to recondition those hives before spring begins in earnest. You will than have a good hive for a package or a split, or even for transferring a colony out of a derelict hive.

Yes, repair and paint the boxes, tops and bottoms. Take a good look at the comb. For a good honey harvest comb in the honey supers should be in good shape. It is the comb for brood chambers that really needs to be examined. Often in the Autumn we combine a weak colony and have some comb from the brood chamber left. Just how old is that comb? Did you bother to put a mark on the top bar to indicate the year it was drawn? No? Well, there is plenty of room for dates on a top bar. If you do not wish to scribble up the top bar you can find other ways of marking.

We have been in the habit of putting all sorts of medicines in the hive for real and imagined problems.

We have not given any thought to the effect of all those things on the wax. Many of the medicines we have used have been absorbed into the wax. Many beekeepers have used PDB for prevention of wax moth. PDB goes into the wax. If you don't remove old comb your bees are being subjected to the various chemicals continually. February is a good time to get rid of old comb. If you are using plastic foundation you can scrape off the built-out comb. If you use wax foundation you will have to cut it from the frame and clean up the frame. Just remember that wax foundation gets

brittle in cold weather so you might wait for replacement until the temperature is a bit warmer.

February is a good time to build hive stands. Have you ever wished you didn't have to bend over so much while inspecting your hives? With all this equipment lying around now is a good time to figure out just what sort of hive stand you really want and how high it should be – for you.

Well, hive work is just about all done. Now we are going to think into the future a bit. Is everything OK with your uncapping knife and extractor? Look over your inventory of containers. Will you have enough for an ordinary honey harvest or do you need to order more? Check the lid supply. If your customers are returning jars have you thrown away the used caps and ordered enough extra for those jars? It's still snowing outdoors and you probably have forgotten that night last summer when you ran out of lids and still had honey to bottle. The equipment suppliers will really be surprised at your early order for containers and bottling supplies.

This may be the year when you wish to try some new styles of jars and bears. Look through

the catalogs. You may see something to inspire you to try a new market for your honey. You may have been muttering for a while about having a new label – one that reflects 2006 instead of 1998. Graphics do change and what was appealing eight or 10 years ago is out of style now. Beekeepers need to take lessons from the wine industry or the coffee industry. Take some time on a rainy day to see what those two are doing with packaging. Then go home and plan what you can do this year with your honey industry, however small.

Yes, February is a good time for many of us to do something about all those beekeeping projects we dreamt about during last year's beekeeping season. Can you remember all of those great ideas? Probably not because you didn't have that nice calendar to make notes. So do that this year.

All finished with catching up on beekeeping tasks? Great! However you may well be asked to resign your membership in the Procrastinators Society. But I am sure you can show them something you haven't done yet. **BC**

Ann Harman is making her list and checking it twice at her home in Flint Hill, VA.

!!! FRAMES !!! Are Here!!

Standard wedged top bar frames available in 9-1/8" (deep), 6-5/8" (medium), 5-3/8" (shallow) with grooved or split bottom bars. Grooved top bars available by special order.

Order in multiples of 10 only.

10-90 (each)	\$.65
100-490	\$.55
500-990	\$.49
1000-4990	\$.46
5000 +	\$.42

Budget Grade: Subtract 15%

WANT TO BE A DEALER? GIVE US A CALL.

Also Available:

- select grade
- 3/4 supers
- budget grade
- migratory lids
- nuc (5 frame)
- moving screens
- 8-frame
- double screens

We now accept credit card payments



QUALITY WOODENWARE

10-frame woodenware:

(unassembled commercial prices)

Telescoping Lids	\$10.75
Inner Covers	\$ 4.20
Top Feeders	\$11.02
Shallow Supers	\$ 5.17
Midwestern Supers	\$ 5.67
Deep Hive Bodies	\$ 8.33
Bottom Boards	\$ 7.36

Assembled, painted, and quantity prices available.

Assembled Screened Bottom Boards . . . \$15.90

"Our saw cuts = Your price cuts!"



**BEELINE
APIARIES**
Woodenware Manufacturing
28 Milnor Rd.
Greencastle, PA 17225-8411
Phone: (717) 597-7059
Fax: (717) 597-7771



? DO YOU KNOW ?

Honey

Clarence Collison

Mississippi State University

Honey is normally derived from a blend of nectars coming from a variety of different floral sources. The basic qualities of the final product depends on which floral sources supplied the nectar. Honey varies in color, ratio of fructose to glucose, flavor, clarity etc. Some sources of honey come predominantly from one floral source and are labeled as a single floral source honey while others are an unrecognizable blend coming from numerous floral sources.

In addition to excellent floral sources, honey production also requires a large foraging bee population. Food resource exploitation by bees is dependent on

the foraging characteristics of the colonies and environmental factors. How does a foraging bee determine which flowers to work and how to work a particular blossom for the first time? Even with the help of visual and olfactory clues, a bee must still learn how best to gain access to the nectar and/or pollen of different types of flowers. Foraging behavior is not fixed but shows great adaptability. Bees learn on the job as they work the flowers of different honey plants.

Please take a few minutes and answer the following questions to determine how familiar you are with these important topics.

Level I Beekeeping

Please match the following floral sources with the appropriate description. (1 point each)

A. Sourwood B. Motherwort C. Holly D. Red Maple
E. New England Aster F. Canola G. Blue Curls

1. ___ The flowers are pale pink to whitish, sometimes with purple spots and are arranged in circular clusters around the square stems.
2. ___ The reddish flowers are arranged in clusters and come out before the leaves.
3. ___ Individual flower heads consists of ray florets that are generally purple, but pink or white forms exist and the disc flowers are yellow.
4. ___ White urn-shaped and fragrant flowers that are about 0.3 inches long and are arranged along stems that attach to a common stem.
5. ___ Shrubby perennials whose flowers appear in dense short-stemmed axillary clusters. The four stamens and style are about twice as long as the petals.
6. ___ Deciduous evergreen shrubs that are either male or female.
7. ___ An oil seed plant with yellow inflorescences that produces light colored honey with a good flavor.
8. ___ The genus *Acer* are woody trees whose flowers produce both nectar and pollen. (True or False)
9. ___ Spring titi, Summer titi and swamp titi are excellent sources of nectar and pollen in the southern states. (True or False)
10. ___ Tupelo trees are commonly found in wet, swampy areas. (True or False)
11. ___ Catnip flowers are highly attractive to honey bees and it is considered to be an excellent source of honey. (True or False)
12. ___ Melaleuca and Brazilian Pepper are major Spring floral sources in southern Florida. (True or False)
13. What is the common name for honey produced from little leaf linden (*Tilia cordata*). (1 point)

Advanced Beekeeping

14. ___ Ethyl oleate, a primer pheromone, is involved in the regulation of house bees becoming foragers. (True or False)
15. ___ In general, large nectaries, numerous stomates and connections to large quantities of phloem tissue appear to be correlated with high nectar production. (True or False)
16. ___ Colonies adjust their pollen foraging effort in accordance with the pollen need in the hive. (True or False)
17. ___ Protein trophallaxis is involved in assisting foragers in determining pollen levels (need) within the hive. (True or False)
18. ___ As pollen needs increase within the hive, the number pollen foragers performing waggle dances significantly increases. (True or False)
19. Please describe two situations that result in cloudy honey. (2 points)
20. ___ The perception of profitability of a nectar reward is dependent upon on the actual richness of the nectar reward (e.g. sugar concentration, volume) and previous foraging experiences. (True or False)
21. ___ Nectar secretion normally occurs around the clock during flowering. (True or False)
22. ___ The average size of the nectar load carried by a forager is:
A. 20 mg B. 60 mg C. 50 mg
D. 30 mg E. 40 mg
23. ___ The average size of a pollen load carried by a forager is:
A. 5 mg B. 15 mg C. 25 mg
D. 10 mg E. 20 mg
24. When a forager returns to the hive, how does she convey the quality of a nectar source to other members of the colony so most of the colonies' nectar comes from the richest sources? (2 points)

ANSWERS ON NEXT PAGE

?Do You Know? Answers

1. B. Motherwort
2. D. Red Maple
3. E. New England Aster
4. A. Sourwood
5. G. Blue Curls
6. C. Holly
7. F. Canola
8. **True** The genus *Acer* is one of two genera making up the maple family. This family is made up of woody trees and shrubs. Bees get both nectar and pollen from these floral sources.
9. **True** Spring titi, swamp titi and Summer titi are found in the southern states, and are considered to be valuable sources of both nectar and pollen.
10. **True** Tupelo trees are generally found in the south. Deciduous, they are generally found in moist locations.
11. **True** Catnip is a perennial and is an excellent honey plant. The species bloom over a long period of time in the Summer.
12. **False** Both Brazilian pepper and Melaleuca are major Fall honey sources in South Florida. Melaleuca bloom in late Summer and Brazilian pepper blooms in September.
13. Basswood
14. **True** Ethyl oleate is a primer pheromone that is involved in regulating when house bees become foragers. Forager bees feed it to house bees keeping them from maturing.
15. **True** There is a positive correlation between nectary size and volume of nectar produced. Some nectaries are connected to the phloem, also are connected to the xylem, which appears to be correlated to the production of dilute nectar.
16. **True** The pollen need of a colony is closely correlated with the relative amounts of larval brood and stored pollen in the hive. Regulation around a homeostatic set-point provides the colony with a modest buffer against external fluctuations in pollen supply and ensures sufficient storage space for nectar.
17. **True** Research has shown

that protein trophallaxis is an important information pathway, providing foragers with information about the pollen need of their colony. The trophallactic contacts a pollen forager makes are consistently shorter when pollen need is high compared to when it is low. It is believed that when a colony has ample pollen reserves nurse bees will feed more proteinaceous brood food to adult bees (pollen foragers) than when the colony is in need of pollen. Thus, under low pollen need conditions, protein is widely dispensed throughout the colony via trophallaxis and inhibits pollen foraging.

18. **False** Only a small percentage of pollen foragers perform waggle dances, and did not significantly differ between times of low and high pollen need. There is a trend towards a greater dance probability when pollen need is high.
19. Nectar from different sources contains different amounts of proteins. When moisture is removed to ripen honey, this concentrates the protein and in high enough density is viewed as cloudiness. Minute air bubbles in honey incorporated into it during the extraction process can also give honey a cloudy appearance. Honey in the process of granulation, may also take on a cloudy appearance as crystals form and increase in size and number.
20. **True** The assessment of the floral resource is not based just on the absolute profitability, but varies with immediate past experience of the foragers. Re-

search has shown that bee respond differently to resources depending on whether they had last foraged on a solution of higher or lower sugar concentration. The bees may be more attracted to flowers that have higher nectar rewards after they have foraging experience on flowers of lower nectar reward. This will be reflected in their successful recruitment in the hive. Yet, the reverse experience is more pronounced. If the bees have been foraging on high reward flowers, they are even less likely than expected to be attracted to flowers with lower rewards, and they will not recruit other foragers to these flowers.

21. **False** Flowers typically do not secrete nectar when the plant's primary pollinators are not present. From the flower's perspective, this makes sense - it would be counter-productive to provide nectar to animals that do not perform the task of pollination.
22. E) 40 mg
23. B) 15 mg
24. The foraging force is recruited to the richest source of nectar by the intensity of the dance, influenced by factors affecting the profitability of the food source such as sugar concentration, nectar abundance, ease of obtaining the nectar and distance from the hive. Each bee integrates these factors to arrive at an overall energetic profitability of the floral patch it is visiting.

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.

Oxalic Acid Vaporizer



The fastest Vaporizer available powered by a 12 Volt car battery. Treat 4, 8, 12 or more hives in approx. 60+ seconds

For more info please call or visit our website
Heilyser Technology Ltd.

685 Dalkeith Ave., Sidney, BC, V8L 5G7, Canada
Phone/Fax: 1 250 656-8727 • Email: oriolein@shaw.ca
<http://www.members.shaw.ca/oriolein>

GLEANNINGS

FEBRUARY 2006 • ALL THE NEWS THAT FITS

APIGUARD APPROVED IN U.S.

Vita's slow-release thymol gel product APIGUARD, for the control of *Varroa* mites on honey bees was registered by the EPA on December 30, 2005. Individual State registrations are now in process. The product will be available through Dadant, with a Section 3 general label.

APIGUARD is a useful tool, especially in the control of pyrethroid and OP-resistant mites and could help save a lot of bees in the U.S. this year.

GROCERY NEWS

Wal-Mart Grows – The world's biggest retailer intends to only get bigger. Wal-Mart Stores, Inc. confirmed that its plans for the coming year include 370 U.S. units, larger stores for Canada, and up to 230 new stores in other countries.

In December Wal-Mart acquired 545 new stores, along with more than 50,000 new associates, in Japan and Brazil, capping a year of robust growth, and the company's proposed deal to acquire a majority interest in The Seiyu Ltd., a leading Japanese chain with 405 stores, was given the nod by Seiyu shareholders. This followed an announcement the same week that Wal-Mart would acquire 140 Sonae stores in Brazil.

Wal-Mart also said it would build expanded stores, offering fresh food and a wider selection, in Canada next year.

These developments all followed the September announcement that Wal-Mart had purchased a one-third interest in Central American Retail Holding Co. (CARHCO) with 363 supermarkets and other stores in Guatemala, Honduras, El Salvador, Nicaragua, and Costa Rica.

Wal-Mart's growth plan 2006 includes opening as many as 600 new stores and clubs in various spots on the globe. Wal-Mart currently operates more than 5,400 stores and clubs worldwide.

As of November 30, 2005, Wal-Mart operated 1,224 discount stores, 1,929 Supercenters, 558 Sam's Clubs, and 97 Neighborhood Markets in the United States,

and 1,707 units in international markets.

Alternative Formats Rule – Traditionally grocery chains are being squeezed out of the picture by the growth of alternative formats – namely supercenters, warehouse clubs, dollar stores, drug-stores, and convenience stores – are increasing their grocery square footage and sales, thus taking a big bite out of the consumer base of the traditional grocery chains.

Competition for customers is fierce, while top-line growth in the industry remains modest. "The pricing pressure has intensified with the rapid expansion of the alternative formats, especially Wal-Mart Stores Inc.'s supercenter stores," said Euler Hermes' ACI risk v.p., Francois Bergeron. "This has affected operating margins for the grocery chains, and the smaller regional players in the industry may suffer disproportionately from the increased competition and tougher climate," he said.

In response many chains are changing their primary focus in order to survive. Some are offering more premium goods to customers, while others are focusing more on better execution and increased service for customers. "A new format is also emerging in the U.S., with chains like Aldi's, Trader Joe's, and Supervalu's Save-A-Lot," he said. "These no-frills, deep-discount stores are designed to compete well against the supercenters and warehouse

Continued on Page 59

HONEY IN SPACE

Since its launch a year and half ago, Minimus.biz has quickly become 'the' place to go for individual and travel size items. Recently NASA came to Minimus.biz and purchased several different travel size condiments to send with the astronauts to the International Space Station.

"We are ecstatic to be working with NASA on their portion package needs. We have a lot of varied and interesting customers

coming to Minimus.biz, but I think NASA tops them all," said Minimus.biz Vice President of Marketing Paul Shrater. The astronauts will be able to live up some of their space meals with packets of Kraft® Horseradish Sauce, Grey Poupon® Dijon Mustard, Heinz® Barbeque Sauce and Seafood Cocktail Sauce, Smucker's® Seedless Orange Marmalade, Ocean Spray® Jellied Cranberry Sauce, and Sue Bee® Clover Honey.

HONEY NEWS

DON'T LOSE THOSE HIVES **HiveTracker™** protects and locates beehives and other equipment. **HiveTracker™** uses tiny devices called Radio Frequency (RF) transmitters, which are less than two inches long and no thicker than two quarters, to specifically identify valuable assets such as beehives. These tags can be located using special equipment from distances up to 1,500 feet, meaning that it is very difficult to hide any hive marked with **HiveTracker™**.

HiveMarker™ identifies beehives and other equipment. **HiveMarker™** is a very small tag that carries an identification number that is unique to that tag. The tag is very cheap, and so small that it can be placed in practically any location on, around or even in your beehive. It has a practically unlimited life. Using specially developed hand held readers, these tags can be read from distances up to five feet, and will definitively identify the hive or equipment as being yours.

HiveSentry™ secures beehives and other equipment in holding yards. Available Spring of 2006. **HiveSentry™** is a cell-phone/internet reporting station that calls you when your beehives or pallets move.

For more information on these contact Bee Alert Technology, Inc., 1620 Rodgers T., Suite #1, Missoula, MT 59802, 406.541.3160.

Pesticides Banned Environmentalists are hailing a Canadian Supreme Court decision that upholds Toronto's ban on pesticides.

"It's an enormous victory," Gideon Forman, of the Canadian Association of Physicians for the Environment, said. "We hope other cities take strength from it and pass their own bylaws."

The bylaw – passed by Toronto council in 2003 – essentially banned the use of pesticides with few exceptions. The pesticide industry challenged it arguing it duplicates existing federal and provincial laws on pesticide use, which are also designed to protect health and safety.

The bylaw restricts the outdoor use of pesticides – insecticides, herbicides and fungicides. As of September 1 this year, commercial applicators could face a \$225 ticket for non-compliance.

From Organic Consumers Association

British Ban Britain's customs men and sniffer dogs have a new target. It isn't drugs. It isn't booze. Actually, it's honey. HM Revenue & Customs officials seized nearly 15 tons of honey last year – 10 times the weight of heroin they snatched.

A curious change in priorities, perhaps? "We're concerned that in many countries it is not being produced in a hygienic way," a spokesman explains earnestly. Importing honey from more than 100 places –

Continued on Page 64

low. Period. You take care of the people who take care of you. Everything else comes second – profit, ego, feelings. It'll work out.

We all learned that lesson. Of five kids, three are in the medical profession, one in upper retail management...and me. We learned that lesson pretty well. That, and one other. Work – get there early, do your job, stay late to finish, and show up every day because you need to take care of the people who take care of you.

Dad wasn't a spiritual man. Not a church goer by any stretch, which drove our Mom crazy. But he lived by that Golden Rule we all know, which is pretty solid grounding for anyone.

I wish you could have met my Dad. He was a pretty special guy. You would have liked him I think, even if he wasn't a beekeeper.

•

Jim Fischer's Bee-Quick web page has a section entitled the Wall Of Shame, featuring food products for sale that advertise honey as an

ingredient, and have little, or no honey inside. He's gathered a lot of them, and if you haven't seen it, take a look...it's a gem (www.bee-quick.com). The point he brings up so well is just that...there are lots of products that proclaim the value of honey without the actual, real life product. We all know they exist, and we all wish they'd play by the rules, but apparently they don't.

The National Honey Board took this threat to heart recently, and conducted a huge survey on this subject to find out just how confusing these products were...do people believe them and does it make a difference.

The short answer is yes, they believe them, and it does make some difference once they find they've been conned. Here's some of the study. More later.

They used several honey blend products, one artificial honey product and one pure honey product, all in bears except one cylinder. They asked people if they would buy them. Prices were significantly lower for the blended products than honey and the imitation honey.

Well, 80% expected to find *some* honey in Sugar Free Imitation Honey. 80%! Worse, 30% expected to find *only* honey in this labeled container.

Honey blend labeled products confused people, too. 33 – 41% expect to find *only* honey in these labeled containers.

42% of those interviewed think that *pure* honey has additives, and they all expect to find some kind of sugar or syrup in all of the products they were shown.

Why would they buy this stuff? Well, they liked the packaging. Good For You is another reason (especially with the imitation honey), and price was a factor.

The worst part of this is that, once it was explained that the honey blends actually contained syrups or sugar, and only *some* honey, half changed their minds about blends being a good product. Which means, folks, that half didn't. Do you think we have a problem?



Are you
searching for
your "One True Love"
this Valentine's Day?

Fall in LOVE with Rossman's "Long-Life Cypress" Woodenware and Italian Queens and Package Bees!

We have a full line of Beekeeping equipment and Italian Queen and Package Bees. Call for a free catalog and available ship dates!

800-333-7677

Visit us on the web at www.gabees.com



P.O. Box 909, Moultrie, GA 31776
Open M-F 8am-5pm ET
800.333.7677 Orderline
229.985.0209 Fax
www.gabees.com

WE SELL 100% Fresh Pure Bee Pollen

US BEE, INC.

636 Turnbull Canyon Road
City of Industry, CA 91745

Tel: 626-336-6379

Fax: 626-855-3087

e-mail: usbeeinc@yahoo.com

BEE POLLEN

Excellent Quality - Low Moisture

5 lbs.....	\$ 18.00
10 lbs.	\$ 34.00
50 lbs.	\$ 160.00
100 lbs.	\$ 300.00
1000 lbs.	\$2800.00

DRAPER'S SUPER BEE

Phone (402) 274-3725

BEEKEEPING SUPPLIES * HONEY * POLLEN

Call for a free pollen sample & supply catalog.



Allen V. Seilheimer, New Auburn, WI 59, passed away November 23, 2005. Born January 13, 1946, in Chicago, Illinois, his parents, Charles and Kathleen Seilheimer, operated Clear Lake Resort on Long Lake in Rush County in northern Wisconsin.

While at the University of Minnesota Allen met Dr. Basil Furgala who had a major influence on Dr. Seilheimer's future career as a large-scale commercial beekeeper, and he met Sandra Hatch. They were married April 13, 1974, in Dover Massachusetts. Sandra has worked as Allen's full partner in their bee business for more than 30 years.

Allen ran his operation to the six-way pallet system, and avoided the harsh Winters of northern Wisconsin by migrating south with all their colonies. They have wintered their bees in southern IL, MS, FL and TX.

Their many faithful employees were paid by the day with no assurance of the "day" ending after a set number of hours. Moving colonies into scattered cranberry properties and fruit orchards during hours of darkness (or heat) does not lend itself to a "normal" eight-to-five day. One of these employees has purchased a part of the Seilheimer Honey Co.

clubs, but it is obvious that many of the regional and national grocery chains will need to reinvent themselves in order to maintain their share of this increasingly competitive marketplace.

Upscale Honey – The folks at Food & Wine magazine have their sights on what will be hot in the culinary world during 2006.

In its January issue, the magazine's annual trend report lists these top picks:

- Cocktails: From the artisanal ingredients this will be the biggest trend to watch.
- Top ingredients; Tiny vegetables, Middle Eastern sweets, grass-fed beef, *artisanal honey*, "pre-prepped" suppers.
- Restaurants: Several are creating flavored salts and offering do-it-yourself seasonings such as flights of peppercorns. Pickling is big, from pickled heirloom cranberries to pickled-juice "air."
- Wines in creative packaging: Single-serve bottles, bag-in-a-box, cans and plastic bottles.
- Black appliances: Appliances made with black glass are the latest fashion.

10 Food Trends

1. Gift Cards – No fees to pay to MasterCard; the cash comes in up front, floating out there no matter how long it takes to use and not all the money gets spent.
2. Better bread – Honey wheat bread sandwiches at Arby's, the ciabatta that replaced the standard white bread bun at Carl's Jr. Panera Bread is one of the hottest franchises in the restaurant business.
3. Sugarless soda/Schizo consumer – Diet drinks now outsell their naturally sweetened counterparts. Artificially sweetened drinks will leap into grocery carts.
4. All Natural/Organic – It

doesn't matter that those two terms have almost no meaning. Eating all natural and/or organic just sounds like the right thing to do to the upcoming Generation X. The phrase "all natural can mean just about anything; it has no nutritional meaning whatsoever and isn't well-regulated by the FDA. Organic is only slightly more defined.

5. Tea time – It's the new coffee and a drink that's been steadily losing market share for years will stage a comeback. Here's proof positive: Starbucks peddles Chai, a tea-based dairy drink laced with ginger, honey, vanilla or whatever you can find in the spice drawer that sounds half decent.

6. Feeding the old folks – Baby boomers will officially stop being babies and start entering their golden years in 2006. These erstwhile hippies never intended to grow old and don't ever plan to die. They will demand pharmaceuticals that will help them live longer, healthier lives and the food industry will come to their aid. This is a HUGE and rapidly growing market.

7. Burping the babies – We've never skimped on our children. With wretched excess is \$8 for a jar of baby food containing four ounces of all natural fruit *gelee* out of the question?

8. Mass quantities – Burger King and Hardee's said to hell with healthy. "We're feeding our core audience what they want, not what they need." Half pound mega burgers rule.

9. Fruitarianism – Up-and-coming high schoolers will start to move away from a vegetarian diet to an all fruit diet of things like apples, peaches, pears and exotica like star fruit and cherimoya.

10. GI diets – No, we're not talking about military MRE's.

We're talking Glycemic Index which was developed to help control glucose levels in diabetics. High GI foods result in a greater increase in blood glucose levels.

More Trends

Shopping With A List – In 2003, 46% of shoppers said they shop with a list "all the time." But, in 2005, that percentage has dropped to 42%. In addition, fewer shoppers are actually listing a specific brand on their shopping list. In 2003, 14% said they "write down the brand of the product," in 2004 that increased slightly to 15%, but then declined in 2005 to 11%, towards a more holistic purchasing behavior that is store-centric vs. brand-centric. The trend indicates that price is not as important as it used to be, dropping from 90% in 2003 to 87% in 2005. In addition, "products that are on sale" dropped from 85% in 2003 to 81% in 2005.

THE ONE MOST IMPORTANT factor in purchase behavior? "Nutrition" exhibited the most dramatic increase going from 20% in 2003 to 29% in 2005. And, "price" showed the most dramatic decline going from 31% in 2003 to 23% in 2005. Shoppers have clearly switched priorities.

Organics? Maybe – American consumers are the least committed shoppers in the world when it comes to the purchase of organic products, according to ACNielsen. Asked about their purchasing of organic alternatives from 11 food and beverage categories, between six and 15 percent of U.S. consumers said they purchase such products regularly – far less than in any other country included in the study. This is largely a matter of price.

from Bakery, and Grocers

CA MEETING NEWS

Oxalic Acid For Mite Control – Europeans have been using oxalic acid in mite control programs, but it is not registered in most countries. Those countries that allow its use decided on 50 milliequivalents of free acid as an acceptable tolerance level in honey. If used as recommended, that criterion is easily met.

Beekeepers can apply oxalic acid by trickling, preferred European method. They often get up to 90% effectiveness in broodless colonies. Tricking is

done with acid dissolved in sugar syrup. The treatment will be directed at broodless colonies in Autumn or early Winter, but when temperatures are above freezing. Although the diluted acid is not too dangerous, rubber gloves and goggles will be required during formulation and application of the solution.

The estimated cost of treatment is about four to five cents per hive. It also was stated that the solution works best when freshly mixed. It loses its effect relatively

quickly at room temperature, but can be stored refrigerated for a day or two.

Australian Bees – George Hansen, a commercial beekeeper from Oregon, imported packages of honey bees from Australia for almond pollination in 2005.

The bees were shipped in wooden/screen package boxes, palletized and set on metal sheets so that the loads would move well along areas with cargo rollers.

It didn't take long for the liberated bees to find food sources

and begin building up. They really went to town and proved that "late season" bees can act very much like "early season" bees under good flight conditions. The three and four pound packages developed at about the same rate. They had filled two deeps with bees by two weeks after almonds.

It appeared that the Australian queens and bees were as productive as their U.S. counterparts. There may have been a bit more chalkbrood, but there was no worry about *Varroa* or small hive beetles arriving in the packages.

Continued on Page 64



Order Package Bees Now! Shipping Begins April 1

Queens & Packages

3# Swarm w/Italian Queen . . . ea. . . . \$60.00
SAVE - 10 or more \$58.00 ea.

Add: \$2.00 for Marked Queen
\$2.00 for Clipped Queen

Prices do not include shipping charges.

To substitute Russian Queens . . . add \$3.00 ea. to queen and package prices.

2006 QUEENS

Italian Queens . . . \$14.50 ea.

10 - 24 . . . \$13.00 ea.

25 and up . . . \$12.75 ea.

Queens shipped by U.S. Mail-Insured. Add \$2 to all queen orders, regardless of quantity.

We have set aside every Saturday in April and the first three Saturdays in May for package bee pick up at our Clarkston, Kentucky plant. Contact us early to reserve your bees for the Saturday of your choice.



No more hammers and nails! This heavy duty stapler saves time and will use staples 1/2" to 1-1/2".

Cat. #609 - \$115

Air Hose, Valve and Staples must be purchased separately.

HFCS Corn Syrup Available by the Pail or Drum	Queen Rearing Books, Videos & Equipment	100% Beeswax Foundation Sheets Wired or Plain	Woodenware Protective Clothing Honey Bottlers & Containers
Beekeeping 101, 201 & 301 + "Beekeeping Made Easy" all on one disk. #623 \$20	Plastic Foundation 8-3/8" Black 5 1/2" White	Green Plastic 1 piece Drone Comb Frame & Foundation	

Walter T. Kelley Co., Inc.

P.O. Box 240 • 807 West Main Street • Clarkston, Kentucky 42726-0240

Ph: 800.233.2899 • Fax: 270.242.4801

www.kelleybees.com email: sales@kelleybees.com



Display Advertisers

Bees & Queens

Australian Queen Exporters	5
BeeSupply.com	28
Brown's Bees (Australia)	1
Buckeye Bees	12
Calvert Apiaries	28
Gardner's Apiaries	23
Glenn Apiaries	17
GzBz Honey Farm	34
Hardeman Apiaries	6
Harper's Honey Farm	27
Harrell & Sons	60
Hawaiian Queen	27
Honey Land Farms	9
Jester Bee Company	17
Koehnen, C.F. & Sons	23
Kurkoski Apiaries	43
Merrimack Valley Apiaries	17
Miksa Honey Farm	9
Old Sol Enterprises	18
Pendell Apiaries	11
Rossman Apiaries	58
Rufer's East Texas Queens	12
Shumans Apiaries	28
Strachan Apiaries	34
Taber's Queens	11
Weaver, B. Apiaries	18
Weaver, R. Apiaries	6
Wilbanks Apiaries	14

Associations/Education

American Honey Producers	34
Farming Magazine	22

Equipment

Beeline Apiaries	54
CC Pollen	2
Cowen Mfg.	41
Dakota Guinness	12
Humble Abodes	
Woodenware	11
Perma Comb	11
Pierce Uncapping Knife	23
Pierco Frames	9
Vented Beehive Cover	9
Younger Smoker	31

Related Items

Angel Bottles	27
Bee Services	62
Branding Irons	12
Global Patties	28



Golden Heritage Foods	18
Mite-Away II	2
Mite Gone	12
Motherlode Products	2
Oxalic Acid Vaporizer	56
Pourette Candles	8
R. M. Farms	31
Tuttle Apiaries	62
U.S. Bee Inc.	58

Suppliers

B&B Honey Farm	14
BetterBee	Inside Front
Betterway Equipment	9
Brushy Mountain	1
Dadant	Inside Back
Draper's Super Bee	58
Hogg Halfcomb Cassette	12
Honey Bee Container	34
Kelley, Walter	63
Mann Lake Supply	Bk Cover
Maxant Inc.	2
MDA Splitter (Nuc Boxes)	18
Mid-Con Agrimarketing	11
Queen Right Colonies	17
Root Publishing	4,5,31
Ross Rounds	11,17
Rossman Apiaries	58
Ruhl Bee Supply	23
Sherriff, B.J.	8
Simpson's Bee Supply	34

BEE NEWS

ABF Awards Five graduate students doing research on honey bees have been awarded \$2,000 scholarships by the ABF Foundation for the Preservation of Honey Bees.

Umberto Moreno, Univ. of Minnesota and University of Sao Paulo – The basic genetics and biology of propolis collection by honey bees.

Brendon Fussnecker, North Carolina State University – Molecular and cellular mechanisms that regulate honey bee behavior.

Bradley Barnd, Purdue – Mapping genes that influence metabolic rate in honey bees.

Andres Ammons, Purdue – The genetic basis of sensitivity to alcohol in honey bees.

Cecilia Andere, National Univ. of Central Buenos Aires Province, Tandill, Argentina – The quality of drone semen stored in different conditions.

Power Bees! Kim Russell, a scientist at the American Museum of Natural History in New York City says honey bees take refuge under power lines when utility companies allow such land to grow shrubs and flowers, National Geographic News reported.

But utilities routinely keep the land mowed beneath their power lines to prevent vegetation from interfering with the delivery of electricity.

She says electric utility companies have a public relations problem with many people disliking power lines. She told National Geographic: "If they put up a sign that says 'Wildlife Refuge,' maybe people will dislike the lines less. There's an opportunity we should follow up on."

This is the first issue of a regular information sheet bringing you up to date with what is going to happen at **Apimondia 2007** being held in Melbourne Australia, September 9-14, 2007.

Australia would like to congratulate Ireland on hosting such a friendly and successful Apimondia. It is our aim to be better than Dublin and make 2007 a memorable occasion for the world's beekeepers. We have preliminary information on our website www.apimondia2007.com

So mark Apimondia 2007 in Melbourne Australia in your diary and come and have a great time.

CA Meeting ... Cont. from 59

Almond Board of CA – Chris Heintz, Research Director for the Almond Board, bearing acreage climbed from over 300,000 in 1980 to current 560,000. Optimistic projections for the future have over 750,000 acres in production by 2010 and, perhaps, nearly 840,000 by 2012. If these numbers hold, there will be a need for over two million colonies by 2012. Obviously, the almond industry is very interested in the health of U.S. honey bee industry and its continuance into the future.

By Eric Mussen, UC Davis

California Awards Given



Steve Park, Beekeeper of the Year

Steve Park is a second generation beekeeper. At age 20, he purchased 1,800 colonies of bees and 250 queen breeding nucs, producing package bees for Canada. In 1988, when the Canadian border closed, he bought more bees and began to diversify into becoming a large honey producer. He currently runs 10,000 colonies and 5,000 queen nucs.

Through the years, he has overcome at least 3,000 hive-eating bears, numerous game wardens who didn't like the excessive double digit permit filings, and the loss of two trucks in one accident when his own employee rear-ended him at a stop sign.

Steve has been a member of CSBA for many years, a member of the CA Apiary Board twice, a member and president of the CA Bee Breeders Association, and on the Board of Directors of Valley Honey Association. He currently is the president of the American Honey Producers Association, making numerous trips to Wash, DC, on behalf of the honey indus-

HONEY NEWS ... Cont. From Page 57

including Egypt and the Virgin Islands – is a criminal offense that can land you a £500 fine.

India Honey Threat The states of Jammu and Kashmir, India the Korean Haplotype of *Varroa* has destroyed 80 percent of the bee colonies in the states between October and December, 05.

Currently, there is no remedy to this disease which has hit bees for the first time in the state, severely affecting the honey business.

Scientist Dr. M.K. Khushu said Korean Haplotype has hit not only Jammu-Kashmir, but all of North India, including the neighboring Himachal Pradesh, Punjab, Rajasthan, Uttaranchal and Uttar Pradesh.

"The impact of the disease on bees has been devastating," said Dr. Khushu adding that around 80% of the bee colonies in the state have been completely destroyed, causing irreparable loss to bee farmers.

"The infestation is caused by a mite which is a new species of *Varroa destructor*, identified by Dr. Anderson" Dr. Khushu explained.

Beeswax Rising U.S. Beeswax market is showing some strengthening because of four consecutive short honey crops in this country resulting in an estimated 2,000,000 pound drop in the available supply of domestic beeswax. This has caused refiners and end-users to scramble for the existing supplies that are available. Prices continue to move up because of short supply. This should continue through Summer.

The last price spike in the beeswax market was approximately 10 years ago when demand was outstripping the supply. At that time, prices for crude U.S. beeswax topped \$2.50 per pound which was higher than refined beeswax from Europe and allowed European refiners to take business from the U.S. refiners. The end result of this spike in prices left a much weaker U.S. beeswax industry. It has taken eight years and four short crops in this country to bring back some strength in the market that was lost 10 years ago. Cheap beeswax from China continues to fill the gap in the supply shortage.

Canada Honey Down Canadian honey production in 2005 slipped to 33,918 metric tons, 1% below the year earlier level due to lower production in Alberta and in British Columbia. Low prices for honey are adversely affecting the market. Some beekeeping groups are exploring Canadian anti-dumping law provisions over concerns about imports of low-priced Chinese honey.

Dogfight With Aerial Applicator In the most recent development in the Minnesota case involving pesticide-spraying and its alleged effect on honey bees, pesticide spray applicator Terry Ricks agreed to relinquish his spray airplane as partial settlement and release of beekeepers' claims for damages arising from lost beehives as a result of the spraying. Ricks is one of several commercial spray applicators accused of having applied the insecticide Sevin XLR Plus to hybrid poplar tree plantations. The balance of the beekeepers' settlement with Ricks is a cash settlement of an undisclosed amount that may be collected only through an assignment by Ricks to the beekeepers of any insurance rights available to Ricks for his pesticide-spraying activities.

This settlement follows an earlier settlement last Summer between beekeepers and the MN DNR in which the DNR agreed among other things, to pay, among other things, \$335,000 cash to the beekeepers.

The dispute between the beekeepers and the poplar growers centers on beekeepers' attempts to enforce proper application of the pesticide according to the federally-mandated and federally-approved label Sevin XLR Plus. The label includes a specific Bee Caution which states, in part, "Do not apply this product or allow it to drift to blooming crops or weeds if bees are foraging in the treatment area." The beekeepers contend that hundreds of pesticide spraying applications violated this prohibition because the spraying occurred in areas of blooming weeds during times of the day when bees are foraging for pollen and nectar.

Gary A. Van Cleve Larkin, Hoffman, Daly & Lindgren, Ltd.

try. He was awarded the Young Beekeeper of the Year award in 1982.

Other Awards given at the California convention include **Liz Vaenoski**, President's Award; **Leslie Ferguson, Jr.**, Lifetime Honorary Beekeeper; **Larry Lima**, CSBA Young Beekeeper of the Year and **Jane Seifert**; Distinguished Service Award.