Bee Culture

APRIL 1993

1·9·9·3 WHO'S WHO
THE DIRECTORY OF NORTH AMERICAN BEEKEEPING

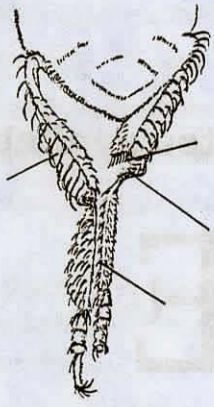
GETTING THERE
THE BASICS OF POLLINATION BUSINESS

GEORGIA ON MY MIND
PEACH STATE BEEKEEPING IS GREAT

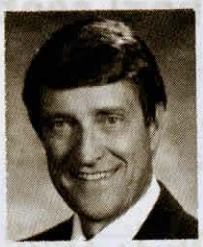
THE BRAMBLES
PRICKLY PLANTS, PERFECT HONEY

Apr

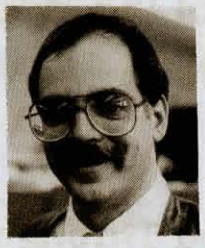
COLUMNS



DEPARTMENTS



JOHN ROOT
Publisher



KIM FLOTTUM
Editor

John Root *Publisher*
Robert Stanners *Assoc. Publisher*
Kim Flottum *Editor*

Kathy Summers *Production Coordinator*
Susan Steppenbacker *Photo Supervisor*
Diana Sammataro *Consultant*
Buzz Phillips *Circulation Director*

Dawn Feagan *Circulation & Advertising*

Contributors: *Roger Morse, Richard Taylor, Michael Burgett, Dewey Caron, Jeff Ott, Dick Bonney, B.A. Stringer*

Subscription Rates:
United States, one year, $15.00; two years, $28.00. Newsstand Price: $1.95. All other countries, (U.S. Currency only), $7.50 per year additional for postage. Send remittance by money order, bank draft, express money order or check. Published monthly. Change of Address: Return completed form contained inside issue. Articles are solicited opinions expressed by the authors are not necessarily those of the publishers.

Advertising:
For information on placing display advertisements, contact our Advertising Dept. 216-725-6677 Ext. 220.

Postmaster:
Please send form 3579 to: The A.I. Root Co., 623 W. Liberty St., Medina, OH 44256. Tele. 216-725-6677.

Circulation Figures reviewed by Deloitte & Touche. CPAs.

The A.I. Root Co., Publishers
623 W. Liberty Street
Medina, Ohio 44256

VOL 121 ◊ NO 4

i l '93

FEATURES

The Fateful *Sting*
An allergic reaction to a honey bee sting can occur at anytime, to anyone - even tried & true beekeepers. Know the symptoms, and know what to do. (by Steve Beach)
200

Getting There
If you're moving bees for pollination this spring there are some common sense rules to follow. Have good colonies, and move them very carefully. (by Richard Bonney)
204

Georgia On My Mind
Georgia is *almost* all things to all beekeepers. Take a look at the Peach state from North to South and from spring to fall - honey production, queen and package bees and even pollination - it's all in Georgia, and almost all of it's in May. (by Dr. Keith Delaplane)
207

Cover
Brambles furnish a wonderful crop for bees and beekeepers, and the berries are only frosting on the cake. (Flottum photo)

The Brambles
Brambles, whether blackberries, raspberries, marionberries, loganberries, boysenberries or youngberries are all excellent sources of nectar and pollen for bees, and honey and fruit for beekeepers. (by B.A. Stringer)
211

Bring It On Home
Once a colony has swarmed, the challenge lies in obtaining control. Some thoughts on how to go about this task. (by Jeff Ott)
216

What Did I Do Last Time?
Keeping records has been pretty well examined recently, but you haven't seen it all yet. Check out this system. (by O.B. Wiser)
213

March Photo Credit
There were two remarkable photos on the cover of the March issue. The Tracheal mite photo was taken by Tom Webster from KY State University. The larger photo of bees in cells was taken by Randy Knotts, from Liberty, MO.

Who's Who In North American Beekeeping 1993
The Only Directory Of Its Kind - A 12 Page Removable Center Section.

INNER · COVER

There's a proverb, of African origin I believe, that says, 'It takes an entire village to raise a child'. Our society, it seems, too often loses sight of the simplicity of this message. Rather, we focus on building bureaucracies, diluting responsibilities and a committee is held accountable for the outcome. But what of the village? And what of the child?

This isn't a commentary on family values or the education system we have built. But with the threatened, and possibly imminent withdrawal of the government's subsidy and loan program for honey, *our* entire village will be drawn into the fray, and each and every child therein will feel the effects.

Of course efforts of Herculean proportions are underway in Washington by industry members wishing to maintain the status quo. But the Federal powers-that-be have been trying to abolish this subsidy since Eisenhower was President, so far without success. They may be victorious this time, though. However, I want to discuss the details of this entire program at length and with vigor next month, after diligent preparation.

For now, there are more immediate concerns that directly relate to preparation in the event industry lobbyists do not succeed. More importantly, preparing for what many would consider a crisis is sound policy for any business or enterprise. The Boy Scouts are right – Be Prepared.

So for the sake of argument let's operate under the provision that the headline in this morning's paper read something like "USDA CANCELS ENTIRE HONEY PROGRAM EFFECTIVE IMMEDIATELY"

This hits this season's honey crop right between the eyes. No loan program would be available for honey not even harvested.

For beekeepers not subscribing to government grace this may seem a trifle, and not worthy of worry. For others it is a call to arms. Sadly, for some it is an obituary.

But no matter your involvement in this industry, all will feel the effects – every honey producer (commercial, sideliner or hobbyist), every producer/packer, every packer, importer, equipment manufacturer, publisher, researcher, the Honey Board, financial institutions dealing with the industry, every queen and package producer . . everybody.

You think not? Do you believe our entire village won't feel the result? Think again.

As a worst case, follow along

Next fall, when commercial producers have lots of honey (and this season hold lots of promise), they will also have debt, operating expenses, capital expenses and no loan program to move honey into, and money out of. So, the crop will get sold by those who need instant cash. At what price? Good question. Probably not $.60/lb., or $.55, or even $.50/lb. If enough producers panic the market becomes overwhelmed, leaving packers with two choices – buy low and store (tying up their cash and incurring storage costs), or stop buying.

Meanwhile, producers less anxious hold out, hoping for . . . well, hoping. But not forever. Soon, they too will sell. Again, at what price? And to whom?

Meanwhile, producer's operating and expansion resources dwindle, so fewer supplies are purchased, causing equipment and bee businesses to raise prices to compensate. And all sorts of people are laid off

It's a domino effect, you see. And everybody is affected. The subsidy and loan program were designed to avoid this harvest-time chaos, and it works pretty well, it seems.

Remember, this is a very simplified worst case scenario. And it is a worst case. This industry, sans subsidy, could, and probably would thrive without it. We don't need to be underwritten by a bureaucracy. Even so, there is a good chance it won't go away until *next* year anyway, regardless of pressures from friends or foes. If you're a gambler you may bet that an orderly exit will ocur. In fact, you can bet the whole farm on it, literally (just don't bet mine). But regardless when (and if) the demise decends, packers and producers will have to work together or both will hurt. Financial institutions will need to better understand our form of agriculture. Big packers and little packers must look at their similarities and differences

Our village *must* care for each child or each child will surely die. And then there will be no village.

Be prepared.

Kim Flottum

Save the Village.
And the Children.

Reader Assistance

To subscribe to *Bee Culture* remove or copy the form below, fill it in and return it and your remittance to the address at the bottom. Please allow 3 - 5 weeks for your first copy to arrive. And Thank You!

☐ Please Renew ☐ New Subscription ☐ Send Sample

☐ **2 Years - $28.00** ☐ **1 Year - $15.00**

Foreign Postage — $7.50/year additional for Foreign and Canada.
Find my enclosed check, or charge to my Credit Card.

Name _____

Address _____

City _____ State _____ Zip _____

Please check one.

☐ Visa
☐ MasterCard
☐ Discover

Signature _____ Expiration Date

Send remittance and form to:
Bee Culture, Subscription Department, P. O. Box 706, Medina, Ohio 44258

Subscription Problems. Questions?
Call 1-800-289-7668 – No problem too big or too small. We will help.

ADDRESS CHANGE

If you are moving, please fill in the form below so we can process the change without undue delay. Also, if you have 2 addresses during the year (i.e., winters in Florida and summers in Connecticut), let us know which months you spend where and we can pre-program your address change so you will find us waiting when you move — No Delays, No Fuss!

FOR PERMANENT CHANGE:

Name: _____

Old Address: Street _____

City: _____ State _____ Zip _____

New Address: Street _____

City: _____ State _____ Zip _____

FOR TEMPORARY CHANGE:

Name: _____

Address No. 1: Street _____

City: _____ State _____ Zip _____

Circle Appropriate Months: J F M A M J J A S O N D

Address No. 2: Street _____

City: _____ State _____ Zip _____

Circle Appropriate Months: J F M A M J J A S O N D

Send to: The A. I. Root Co., Subscription Dept., P. O. Box 706, Medina, OH 44258

- *Bee Culture* is available on microfilm from: University Microfilms, Inc., 300 N. Zeeb Rd., Ann Arbor, MI 48103. Second Class Postage Paid at Medina, OH and additional offices.
- Circulation figures are reviewed by Deloitte & Touche Accounting/Auditing.
- We encourage letters to the editor on any subject whether appearing in the magazine or not. Direct your letters to: Editor, P. O. Box 706, Medina, OH 44258. We reserve the right to edit letters for content and length, but will avoid this if possible.

POSTMASTER: Send Form 3579 to:
623 W. Liberty St., P.O. Box 706, Medina, OH 44258-0706, (216) 725-6677 • FAX No.: (216) 725-5624

NEXT MONTH

One of the best definitions of the word May is 'The flourishing part of life', and that, certainly is what to expect next month.

May is what most of us wait for, and even if the weather (or the bees) seems a bit uncooperative, there's plenty in store in *Bee Culture* to keep you interested.

Without a doubt, removing bees from structures is taking increased importance. And, though some have neither the time or energy for the task, many are beginning to take a second look at this activity as a second income source. We'll start a two part series next month examining the how-to's and why-should's of removing bees. Even if you don't, you'll learn much about bees, beekeepers, and homeowners from 'Close Encounters'.

May is also our traditional marketing month (Be Prepared we always say), so next time there are three great pieces on the ready. If your operation is large enough to be concerned about the Federal loan and subsidy program you'll appreciate the 'Alternative Funding' piece we will feature. If cash flow is a consideration – here are some answers.

Then, besides an introductory overview of marketing in the honey industry from a fresh viewpoint, (we start where the Honey Board leaves off), we finally have a background piece on our monthly honey report. Where do those numbers come from? Why aren't they the same as in my town? Who are those reporters? We're not looking at individuals here, but at how those individuals contribute to the whole, and why our report is as good, or bad, as you thought.

Regular beekeeping is always on tap – making divides, locating apiary sites, swarming, bee biology and behavior – it's all here, 'flourishing as usual' – in May, in *Bee Culture*.

MAILBOX

■ Think Water Now

I have tried a lot of different ways to water my bees and keep them out of my neighbors swimming pool. I tried using sponges one time and killed a lot of bees. I found out later they use formaldehyde in making sponge rubber. Then I used burlap and also killed bees because the bags are treated for bugs and mice. In using pans with floating wood so many would drown. Then I thought of a 6-gallon cracked crock in the garage so I cut a plywood circle about 2" wide to fit the crock and covered it with aluminum screen wire. Then to make it float I took two small pill bottles the same size and wired them to the bottom of the float. If it floats too high, just put a little water in each bottle to adjust. It took about two days for them to start using it. Now there are bees in it most of the day.

Marshall Shyne
Benton Harbor, MI

We encourage letters to the Editor on any conceivable subject – previous articles, opinions, observations, information, speculation, comment or criticism.

Two-way communication is essential to make the magazine as good as you want it to be. And, if you've information to share, the more people that see it the better.

Share your thoughts, ideas or comments with over 12,000 readers. Bee Heard!

■ Curing Winter Blahs!

It is in the middle of another snow storm and continuing below-zero weather here in western New York as I write this. All the bees are snowed in, and it is tough to get into some of our outlying bee yards at all. Even the colonies on the roof of the science building on campus here are getting the brunt of the cold wind. What a wonderful window to summer I saw when the February issue of *Bee Culture* arrived. The beekeeper sitting relaxed on a hive in the middle of a pleasant summer day jotting down records looked like such a nice setting. Outside reality here is white stuff all over and the sky is gray. The sweet smells of the bee yard could almost be detected from your cover. Thank you for the winter lift.

Edward E. Southwick
Brockport, NY

■ Appreciates Balance

I am writing to comment on your magazine *Bee Culture*. It appears to me that you have been maintaining a steady improvement in the magazine as a whole. I have enjoyed the graphics and the attractive presentation of the material contained in the magazine. I am impressed on the focus of the magazine. Even though I am a purely commercial honey producer I find a good balance in the articles presented. The editorial selection of the material and the way it is presented is interesting, refreshing and informative.

Your editorials are thought provoking and although I can't say that I agree one hundred percent with the line of thinking, I do find them challenging.

Congratulations on a constantly improving *Bee Culture* magazine.

Neil Miller
Blackfoot, ID

NEW PRODUCTS

The Stinger Suit

The Stinger Suit is the ultimate for light and moderate beekeeping chores. It is made from tough and durable Dupont tyvek (a spunbonded olefin fiber). It is extremely lightweight (15 oz.), breathable and water resistant.

The suit was designed as a one piece protective outfit. The facemask is a nylon mesh available in white and black. The black material is good because the color helps cut down on glare. The white facemask is just as protective but does produce some amount of glare in sunny conditions. We recommend the black either way because glare can be quite distracting.

The Stinger Suit has an elastic waist, wrists and full foot protection. If you are dissatisfied with the foot protection, simply snip the foot guards off and use leg straps on the bottom of the leg to protect against bees.

The Stinger Suit is washable like a normal garment but when drying, please drip dry. Conventional heat dryers will harm the protective suit.

The Stinger Suit is not manufactured for rugged everyday hard use, but is the finest protective garment available today to keep you protected and comfortable while tending bees in light and moderate work conditions. Since the suit was introduced to the market in fall of 1992, we have sold hundreds to beekeepers and pest control specialists.

The Stinger Suit is great as a back-up protective garment also. Many buyers of the Stinger Suit rely on having the suit in their car or truck at all times as a back-up, in case they forget their everyday suit, or need one in an emergency.

And beekeepers agree

"I can't imagine a better suit for the money!" – Jon Taylor, TX

"The Stinger Suit is quite simply the best." – Bob Dunn, FL

"I would buy every beekeeper one if I had the money!" – Martin Crowther, NY

For more information contact Triangle International, Inc., 88 E. Main St., Suite 440, Mendham, NJ 07945-0805, 1-800-358-8979, FAX (908) 766-0402.

Moving Hives

Moving bees? Ease the job by using KevLok tiedown straps. This wrap strap easily loops around hives even at night and won't irritate bees the way banding does!

Just loop the strap vertically around the stack, attach the quick-disconnect hook to the buckle, pull on free end of strap until moderately tight, and close the buckle to apply up to 125 pounds of tension BY HAND – no tools needed! And it only takes SECONDS!

No more tools to carry, no cutting straps to inspect hives, no pulling staples or cleats, no destruction of woodenware, no residue from non-reuseable steel strapping, no bent staples due to re-nailing, no split cleats, no tangled steel or plastic banding to discard.

KevLok tiedown straps feature – Rapid adjustability; simple lock-in tensioning; quick release; and won't slip under shock or vibration!

Each strap is adjustable from one to nine feet (a 12 foot model is available). The webbing is 1" 2,500 lb. abrasion-resistant Cordura nylon in a bee-friendly yellow color. The hardware is 1,000# tensile, heat-treated steel.

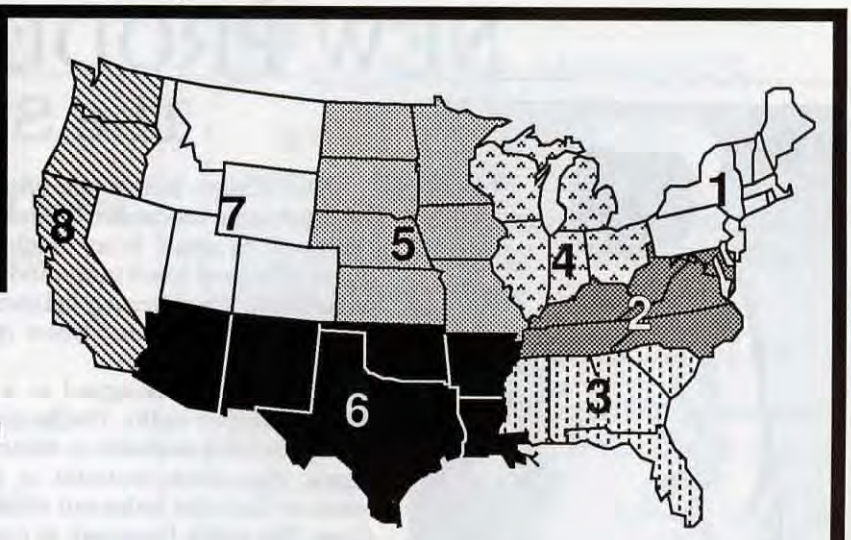
KevLok straps can be used over and over – and come with a lifetime MONEY BACK GUARANTEE.

For information on the five strap package available for $34.95 (7'), or $39.95 (12'), call KevLok Products at 1-800-233-3335. Domestic postage paid.

The 7' strap in use.

APRIL Honey Report

April 1, 1993



REPORT FEATURES

Prices shown are averages from many reporters living in a region, and reflect that region's general price structure. The Range Column lists highest and lowest prices received across all regions, from all reporters.

	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60 #Wh.	47.65	41.38	44.98	39.98	43.75	40.50	42.98	45.50	36.00-55.00	43.95	44.19	44.25
60 # Am.	42.16	40.00	44.40	38.42	41.19	38.50	40.44	42.00	33.00-55.00	40.84	41.43	41.46
55 gal. Wh.	.767	.566	.661	.566	.575	.550	.566	.645	.52-.85	.612	.597	.611
55 gal. Am.	.693	.505	.541	.531	.560	.511	.533	.585	.50-.75	.562	.556	.560
Wholesale – Case Lots												
1/2 # 24's	21.37	21.45	18.88	19.73	13.91	20.77	21.38	22.00	11.50-24.00	20.26	22.20	20.89
1 # 24's	31.37	31.11	30.60	23.40	29.57	36.78	30.36	29.67	16.80-54.00	30.96	30.70	30.01
2 # 12's	26.49	28.62	26.40	27.70	22.57	30.71	28.27	30.25	16.30-48.00	27.80	28.32	28.04
12 oz. Bears 24's	29.22	28.20	31.34	26.85	23.53	26.13	27.09	19.83	14.50-37.60	26.68	26.40	27.77
5 # 6's	33.58	27.22	29.50	31.63	27.91	28.83	27.25	26.70	23.40-33.45	29.42	30.66	31.49
Retail Honey Prices												
1/2 #	1.17	1.21	1.02	1.10	.87	1.07	1.10	1.17	.82-1.29	1.10	1.15	1.23
12 oz. Plas.	1.50	1.70	2.22	1.59	1.37	1.45	1.53	1.41	.95-2.43	1.57	1.53	1.51
1 #	1.70	1.88	1.81	1.79	1.70	1.81	1.82	1.77	1.43-2.39	1.79	1.83	1.75
2 #	3.41	3.25	2.91	2.34	2.83	3.35	3.68	3.71	2.69-3.98	4.41	3.11	2.90
3 #	4.74	4.35	4.67	4.43	3.64	3.92	4.30	4.37	3.50-5.55	4.25	4.39	4.19
4 #	5.86	5.25	5.47	5.39	5.22	4.90	5.19	5.84	4.25-6.49	5.43	5.44	5.30
5 #	7.94	6.50	6.57	6.69	5.95	6.01	6.23	6.08	4.59-8.75	6.51	6.54	6.78
1 # Cream	2.40	2.42	2.58	2.08	2.24	2.46	2.19	1.75	1.74-2.95	2.27	2.21	1.99
1 # Comb	3.41	2.68	2.91	3.33	3.03	3.18	3.29	2.79	2.00-4.95	3.07	3.12	2.82
Round Plas.	2.32	2.51	3.04	2.70	1.99	2.53	2.75	2.87	1.95-3.78	2.52	2.61	2.25
Wax (Light)	2.60	1.23	1.48	1.25	1.35	1.75	1.39	1.25	1.10-3.80	1.63	1.50	1.42
Wax (Dark)	1.60	1.10	1.22	1.10	1.11	1.45	1.17	1.13	.95-2.25	1.28	1.30	1.14
Poll./Col.	34.85	23.50	31.67	35.00	30.00	24.00	33.50	31.50	22.00-40.00	30.39	31.33	30.77

MARKET SHARE

The biggest problem producers will have this year is staying focused. The loan and subsidy program, free trade plans, producer/packer tensions, increased mite pressures all will draw attention - but you still need to make honey to make money. And, everyone who sells honey will need to prepare for life without loans. Financing, marketing – start now.

Region 1

Prices, especially for bulk honey increasing as local supplies disappear. Sales, however, slowing for the same reason. Mite losses expected to be as high as 30% in some areas. March storm probably didn't hurt much.

Region 2

Prices and sales strong across the region, but late winter weather has set back development. March storm really put crimp in things, and cold temps have hurt, too. Mite losses expected to be light, but starvation much more a reality.

Region 3

Sales strong, even with prices soft. Anticipated citrus flow may have significant problems from storm, but too early to tell at press. Mite problems seem to have abated somewhat.

Region 4

Sales all over the map due to lots of honey available, but demand remains high due to extended cold weather. Prices variable, too, depending on location but retail looking strong. Mites a big problem, along with long confinement stress. A good spring could be off to a slow start.

Region 5

Both sales and prices doing fairly well, probably due to the cold weather. But short crop last year means local honey in short supply. Mites, and starvation will take their toll, so watch out.

Region 6

Sales, and prices surprisingly strong, all things considered. Lots of moisture promises terrific spring flow, providing late frost doesn't cut it short. Mites, both kinds still present, and AHB still making the news.

Region 7

Sales, and prices about average for the season and pretty much unchanged. Mites not terrible, yet, anyway, and good soil moisture promises strong early flow.

Region 8

Honey sales average to a bit weak, but the real news is the pollination business. Poor weather hurt almond crop, but the shortage of bees (due to varroa primarily, but tracheal, too), also hurt. WA and OR orchardists are now feeling the pinch. Fewer colonies means less honey means . . . ?, this fall. Stay tuned.

RESEARCH REVIEW

roger morse cornell university ithaca ny

"Good News about those bees from Brazil."

In February I spent a week in Brazil with bee researchers, students and beekeepers. I talked to one student about his recently completed thesis on hygienic behavior in honey bees. We know Africanized honey bees in Brazil are resistant to varroa mites and now we know this is largely because of hygienic and grooming behavior. In fact, this thesis shows that the Africanized honey bees are seven times more resistant to the mites than Italian bees. The Italians used in these tests were some that were carried into Brazil from the United States by Dr. David De Jong, one of the professors under whom this study was done.

It was suggested several years ago that because worker Africanized honey bees develop in about a day less than the European honey bees that the mites did not have time to mature and that this was the reason for the resistance. While a short development time might be helpful, the student, Dr. Geraldo Moretto, reports that he has seen worker honey bees grasp and bite varroa mites. Bite marks made by worker bees could be seen on the top surfaces of the varroa mites. Moretto told me that worker bees were especially adept at grasping mites that crawled between their legs and to their underside where they attach and feed on the bee's blood. The mites the bees grasp are carried outdoors and discarded.

We now have data to show that some honey bees in Europe, the U.S. and Brazil have the ability to control varroa through grooming. The incidence of the hygienic behavior among European honey bees is much lower than it is among Africanized (and presumably African) honey bees. The behavior appears to be a little different in each group but in all cases revolves around grooming.

Perhaps as important as anything is that beekeepers everywhere in the country be alert to the fact that natural resistance through grooming occurs. Surviving colonies in trees, buildings, abandoned boxes, and beekeeping equipment are potentially resistant and may be useful bees.

At least one commercial queen breeder has some of this resistant stock. In fact, it is probably in the hands of several breeders. Conclusive tests have not been run on all the queens available but that process is in the works.

A second thesis I was shown studied the use of bait hives in the city of Ribierao Preto where about half a million people live. It was shown that bait hives could be used successfully to remove a large number of nuisance swarms. When the bait hives were used firemen, who people usually call about swarms, received fewer calls.

Intensive Vs. Extensive

In practical beekeeping in the U.S. some beekeepers operate more colonies than they have time to visit and manage. Their thought is that by having more colonies spread out over a greater territory they are more likely to secure a crop. There are, on the other hand those who have fewer colonies but who pay greater attention to each one. The same is true in Brazil. I visited with a 1,000 colony beekeeper who routinely captured 200 to 300 swarms in five frame bait hives to make up his losses. He spent little time with his bees and concentrated more on packing and selling his honey and other hive products. I was told that among Brazilians extensive beekeeping is more popular than intensive beekeeping.

Stainless Steel

I was pleased to see tanks and extractors made of stainless steel in the one honey packing plant I visited. I think beekeepers everywhere are becoming more aware of the importance of using only stainless steel in their processing equipment. In any event, the honey I was shown and given was neatly packaged and the beekeepers were obviously aware of the importance of giving customers a first class product.

Stinging Bees

About 50 feet behind the honey bee laboratory where about 25 professors and students worked, and I visited, there was a large apiary of Africanized honey bees. There were about 75 five-frame nucleus colonies and behind them the larger experimental colonies. One afternoon I was with five graduate students, all in their twenties. There were none of the older staff or professors present. I started talking about aggressive bees and what these students thought about them. They had all worked with the gentler European bees that had been brought into Brazil from the United States, and their hybrids, as well as the more aggressive Africanized honey bees. I asked if the average Brazilian today worried about aggressive bees. The students said no. As the discussion progressed it was obvious they were aware that one selected apiary sites with care. Apiaries should be away from dwellings and where children play and there are animals. The students felt the Africanized bees behind the laboratory posed no threat to themselves or anyone else. That little session gave me more confidence that someday we in the United States will reach a more rational position concerning Africanized honey bees.

?DO YOU KNOW?

Pollen & Nectar

clarence collison

Pollen is important to honey bees because it is the primary source of protein in their diet and serves as a strong stimulus for brood rearing in spring. Pollen consumption allows nurse bees to produce and feed royal jelly to their queen and larvae, and it is an important dietary component for young bees and developing larvae. Nectar, the raw product of honey, is also important to the welfare of the colony and financial returns for the beekeeper. All of the nutritional requirements of brood and adults are provided by these two plant-produced substances. Both minor and major floral sources must be present during different seasons of the year when bees are active in order to have strong productive colonies and for maximum returns to the beekeeper. Please take a few minutes and answer the following questions about floral sources, nectar and pollen supplies, and the bee's behavior in collecting these valuable resources.

The first nine questions are true and false. Place a T in front of the statement if entirely true and F if any part of the statement is incorrect. (Each question is worth 1 point).

1. ___ Honey bees mix either honey or nectar with pollen during collection prior to packing it in the pollen baskets.
2. ___ Pollen grains have a very strong outer shell which resists decay.
3. ___ Pollen grains carry the female reproductive cells of plants.
4. ___ Pollen supplies the honey bee with energy.
5. ___ Fresh pollen has a greater nutritional value than stored or dried pollen.
6. ___ Pollens vary in nutritional value to bees depending on their floral source.
7. ___ White sweet clover typically blooms about two weeks earlier than yellow sweet clover.
8. ___ The Beltsville Bee Diet is an example of a pollen supplement.
9. ___ Clovers are often considered to be the most important American honey plants.

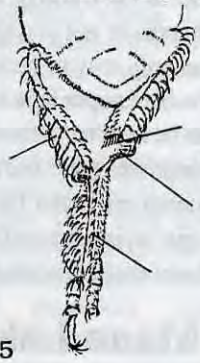
Multiple Choice Questions (1 point each).

10. ___ Structure within the flower responsible for producing pollen.
    A. Pistil
    B. Anthers
    C. Stigma
    D. Filament
    E. Style
11. ___ Crude protein content of pollen is highly variable and ranges between _____ percent.
    A. 8-40 %
    B. 25- 50%
    C. 80-95%
    D. 42-63%
    E. 55- 78%
12. ___ Pollen traps normally are made of hardware cloth _____ grids or perforated metal sheets with 3/16 inch holes.
    A. 3 mesh
    B. 6 mesh
    C. 5 mesh
    D. 2 mesh
    E. 4 mesh

Listed below are several important floral sources that provide pollen and/or nectar for honey bee colonies in various regions of the North America. Please match the correct description with each floral source. (6 points).

A. Saw Palmetto B. Mistletoe C. Dandelion D. Sages E. Red-Bud F. Cranberry

13. _____ Grows as a parasite on trees in the south and serves as an early source of pollen and nectar for bees.
14. _____ Small herbaceous plant that grows in wet bogs and marshes of Eastern Canada and Northeastern U.S. that requires bee visits to secure fruit set.
15. _____ A shrubby plant that is a member of the mint family, with several species that yield surplus water-white honey in California.
16. _____ Low growing palm, found on dry soils in the Gulf Coast region that produces large quantities of distinctive yellow surplus honey.
17. _____ Small tree found in the Eastern U.S. that blooms in early spring before the leaves are out, providing bee pasture for spring brood rearing.
18. _____ Herbaceous plant that provides large quantities of orange pollen pellets and surplus nectar for early spring brood rearing.
19. Define anther dehiscence (1 point).
20. Compare the process of how pollen and propolis are packed into the pollen baskets on the worker's hind legs. (2 points)
21. Below is a diagram showing the hind legs of the worker honey bee and structures involved in the transporting of pollen from the flowers back to the hive. Please label the diagram with the following parts: Pollen Comb, Pollen Rake, Pollen Basket (Corbicula), and Pollen Press (Auricle). (4 points).



ANSWERS ON PAGE 225

THE FATEFUL *STING*

steve beach

Sometimes, one is all it takes.

The first symptom was itching in the palms of my hands. I noticed it within two minutes of the sting and in the next few minutes it spread to my whole upper body and face. My neck and face began to feel swollen, my pulse raced, I began sweating heavily and the world started to recede. I was seeing and hearing everything from what seemed like a great distance as I moved away from the hives and took a seat beneath a tree.

I tried to deny what was happening, "Surely it'll pass. I'm okay, I just need to get my head together." But I was *not* okay and should have been on my way to the nearest emergency room.

My story actually begins a week before this scene with what is known as the sensitizing exposure. After being stung between the eyes, the part of my immune system responsible for guarding against foreign substances began producing millions of custom made weapons for fighting bee venom – and distributing them throughout my body. The sting itself was no big deal. I scratched it out and kept right on working; the swelling was only slight. But when that sting was followed by another the following week

Imagine what would happen if the U.S. military began lobbing nuclear missiles at every jay walker and illegal alien in the country and you'll get a pretty good picture of what took place in my body during that allergic episode. All those specially made weapons were called into play and the chain reaction that ensued was nearly devastating.

In retrospect it's obvious that my partners and I did just about everything wrong in response to the situation. We were robbing the first of about 20 hives in an outyard and didn't bother to put on any protective gear even when we noticed the bees were in an ill mood. Second, when I noticed the first symptoms I should have gone to the hospital *immediately*. Once my thinking became muddled I wasn't able to even make that decision. So I sat there – my pulse would race and then slow to almost nothing; I had alternating sensations of heat and cold; my face and neck throbbed with pressure. I remember trying to focus my mind, to relax, but every time I began to think things were smoothing out, the confused, anxious state of mind would take hold again and my heart would pound. I vaguely remember my partners asking me how I was doing; someone gave me an antihistamine tablet (Benadryl) and I swallowed it. Later my head cleared enough to tell them I wanted to go to the hospital, but by the time we arrived the reaction had just about run its course. I got an injection of Benadryl and was soon on my way home.

I now know that my confused mental state was due to lack of blood (thus oxygen) in my brain. Histamine released from cells throughout my body had caused surface blood vessels to dilate, drawing away much of the blood needed by my brain and internal organs. Had the reaction been only slightly more severe I would have passed from a systemic reaction into full blown anaphylactic shock. I may have found it difficult or even impossible to breathe as my throat began to swell closed. Vital organs would have been starved for oxygen. The brain can tolerate lack

of oxygen for only a few minutes without extensive damage or even death.

You are a beekeeper. You are expected to have answers when the topic is bees. If you've been at it for any length of time it's inevitable that you've heard stories like mine. It does not, however, inevitably follow that you know what steps to take when it happens to you or your friends. Your knowledge is not complete without an understanding of the information that follows.

To begin with, most (but not all) fatalities due to bee sting anaphylaxis occur within 20 minutes of the sting – Benadryl by mouth takes about 30 minutes to enter the bloodstream. If you remember only three words from this article when you think about bee sting anaphylaxis let them be – EVERY SECOND COUNTS. If you notice *any* of the symptoms of an allergic reaction after a bee sting by all means, if you have Benadryl on hand, and the symptoms are still relatively mild, use it – but do it as you proceed immediately to the nearest hospital.

Bee stings go with the territory so to speak, but we can minimize our risks with a bit of preparation and by taking a few precautions. The most dangerous stings are on the face and neck, so even if you don't like wearing all of the protective gear, at least consider using the veil. I'd also recommend working with a partner who is familiar with

Continued on Next Page

KNOW THESE KILLERS

SYMPTOMS

	ANAPHYLAXIS	HEAT EXHAUSTION	HEAT STROKE
Unusual skin color	*	*	*
Variable pulse rate and strength	*	*	*
Unconsciousness	*	*	*
Fever	*		*
Confusion	*		*
Dizziness	*	*	
Nausea/Vomiting	*	*	
Cramps	*	*	
Weakness	*	*	
Hives/Itching	*		
Wheezing	*		
Labored breathing	*		
Coughing/Sneezing	*		
Swelling of face or throat	*		
Diarrhea	*		
Chills	*		
Intense anxiety	*		
Low blood pressure or shock	*		
Headache		*	
Skin may feel cool or hot		*	
Perspiration heavy or absent		*	
Hot dry skin			*
Convulsions			*

✙ FIRST AID ✙

ANAPHYLAXIS –	1. Administer epinephrine (available by prescription) 2. Administer Benadryl if symptoms are still mild and doing so doesn't interfere with item 3 3. Transport to hospital 4. Perform CPR and treat for shock if necessary
HEAT – EXHAUSTION	1. Lie down in cool place with feet slightly raised 2. Slowly drink water – lightly salted if possible
HEAT STROKE –	1. Cool patient as quickly as possible 2. Transport to hospital 3. Adjust cooling efforts to victim's temperature

THE FATEFUL STING ... Cont. From Pg. 201

basic first aid and CPR. There are fairly inexpensive books you can learn these skills from, but as a Red Cross instructor I urge you to take our training class with your partner. That way you'll know for sure he's qualified too. You should also both know the shortest route to the nearest emergency room or trauma center.

It's interesting to note that beekeepers were the focus of some of the earliest research in the field of immunology because of their unusually high tolerance to bee stings. Repeated exposure to bee venom usually has a desensitizing affect on the body, but as with certain other allergy-causing substances, repeated exposure sometimes has the opposite effect. What this amounts to is that *anyone* at any time and for no apparent reason can become hypersensitive to bee venom. I've been stung repeatedly for years; I've taken multiple stings on occasion, yet *one* sting nearly did me in. People generally considered to be at greater risk are over 30 years of age, have other allergies, have family members with allergies, or have at some time experienced more than minor discomfort from a bee sting. There is still no satisfactory cure for insect allergy. The treatment is risky, unreliable, and must be continued for extended periods.

Considering the spread of both the AHB and the fire ant (which can also be a deadly threat to hypersensitive people), it's becoming increasingly important to be prepared for anaphylactic emergencies. Fire ant colonies are usually easy to see and avoid, but when you do get into them you often won't know it until you're covered with ants. And these nasty buggers sting *and* bite. Needless to say, anyone who receives multiple stings from whatever source, should seek medical attention.

An allergic reaction may begin with any number or combination of symptoms. A relatively mild reaction can worsen at any time – even hours after the sting. To compound things further, many of the symptoms of anaphylaxis are also shared by heat related emergencies, another possible problem area for beekeepers. The accompanying chart lists the symptoms and treatments unique to each, as well those they share. Learn it well. Heat stroke, as well as anaphylactic shock, is fatal without prompt and proper care. Precious time spent treating a patient for the wrong trouble could prove disastrous. Precautions to take while working in the heat include drinking plenty of water before and during activity, having sufficient salt in the diet, and just plain taking it easy.

Statistically, only about four people in a thousand need to worry about insect allergies (that's about 50 people who subscribe to this magazine). The problem is you don't know if you're one of them until it's too late. Take precautions – use your protective equipment. I didn't, and my life will never be the same.

SOURCES:

The Peoples Handbook of Allergies & Allergens, by Ruth Winter

Allergies, by Dr. Alvin Silverstein and Virginia B. Silverstein

Insects and Allergy and What To Do About Them, by Claude A. Frazier, M.D. and F.K. Brown

Your Immune System, by Alan E. Nourse, M.D.

The Allergy Self-Help Book, by Sharon Faelten and the Editors of Prevention Magazine

In Self Defense, by Steven B. Mizel and Peter Jaret

Medicine for the Outdoors, by Paul S. Auerbach, M.D.

Medicine for Mountaineering, Ed by James Wilkerson, M.D.

Allergies - Principles & Practice, by Elliott Middleton, Jr.

The American Medical Assoc. Family Medical Guide

American Red Cross Advanced First Aid & Emergency Care

Emergency Care - Third Edition, by Grant, Murray, Bergeron

GETTING THERE

richard bonney

Colonies Used For Pollination Need To Meet Certain Standards Of Size, Health and Age

Sooner or later, most beekeepers give at least passing thought to the idea of renting colonies out for pollination. Most never actually do it, but obviously, some do. Perhaps you will be one of them. Of those who do, some keep it at a very small scale – two or three colonies for the small orchard down the road, for instance. Others get into it more seriously – ten, twenty, perhaps hundreds after a while. Either way, small scale or large, the business of pollination requires a little something extra. First comes the thorough understanding that just any colony won't do. A colony to be used for commercial pollination must meet certain standards. Then, there is the commitment to provide that colony, when and as promised. Not always easy. When the time comes, colonies must be available in spite of winter kill, mites, disease, or any other adversity. Finally, they must be moved to the crop. We will deal with each of these points, starting with the colony.

CHARACTERISTICS

The colony can best be discussed by setting some standards. Over the years many studies have been done to determine what comprises a proper pollinating unit. These can be summarized by stating that a colony used for pollination should have:

at least 30,000 bees
at least six frames with brood
at least four frames (20 pounds) of honey
two deep hive bodies, or equivalent space, with drawn comb throughout

Now let's justify these standards. We can start by looking at the pollination process as performed by the bee. What does it take for a colony to put the requisite number of bees out there in the field?

Bees do not deliberately pollinate flowers. Pollination is a natural result of a bee landing on a flower or series of flowers to collect pollen or nectar. If a bee is foraging for nectar, she will land and push her way to the base of the flower to reach the nectaries. As she moves about in and on the flower, she rubs against the pollen-bearing anthers. Pollen adheres to the plumose hairs of her body. In some instances, pollination is accomplished immediately as she moves about in the flower, transferring pollen from the anthers onto the stigmas of that flower. In other instances the pollen must be taken to another flower. As she moves from flower to flower she progressively distributes the pollen. The process continues until she has a full load of nectar. The bee is not aware that she is distributing pollen.

If the bee is on a pollen foraging trip her actions are a little different. After landing, she will deliberately wallow around in the flower to get a large amount of pollen on her body. She will then back out of the flower, and, either standing on a petal or in hovering flight, will comb the pollen from her body, packing it into the pollen baskets on her hind legs before moving to the next flower. Though she combs her body, some of the pollen grains remain adhering to the hairs, and this pollen rubs off on that next flower.

In both instances, pollination is accomplished. In neither case, however, is it a deliberate or conscious act by the bee – she is merely foraging. Even so, the action of foraging for pollen does a better job of pollination because of the bee's wallowing. She manages to collect and redistribute more pollen by this action.

So, to accomplish pollination we need bees in the field foraging for either nectar or, more preferably, for pollen, and we need as many of those bees as we can get. We do have some control over this, first through the size of the colony, and second through the amount of stores.

Population dynamics come into the picture here. We know there is a division of labor in a bee hive. For the first part of its adult life, each worker remains in the hive performing a variety of tasks – raising brood, cleaning house, building cells, processing honey, and so on. Later they become field bees, foraging for nectar and pollen, and incidentally performing pollination. These are the bees that we care about. Studies have shown that small colonies have proportionally smaller field forces than do large colonies. That is, an average colony of good health and strength may have 50-60% of its workers foraging while the remainder work in the hive. A smaller colony may only have 35-40% of its workers foraging, while a much smaller colony would have even fewer foragers.

In practical terms, this means that two colonies of 20,000 bees each might put out a combined field force of 16,000 bees (20,000 x 40% x two colonies). A single colony of 40,000 bees might put out a field force of 24,000 bees (40,000 x 60%). This is a difference of 8,000 bees actively foraging and pollinating out of a total force of 40,000 bees. It's obvious that smaller colonies are less efficient, and

putting in extra colonies to compensate probably does not accomplish that goal. Experience has shown that a colony with 30,000 bees puts out a field force of acceptable size.

The amount of brood is a further consideration. The presence of brood stimulates pollen collection. It is well known that emerging brood consume large amounts of pollen. Bees insist on a certain minimum of pollen on hand, and further, an availability of pollen in the field if they are to sustain brood raising. The presence of brood then indicates pollen coming in, and the larger the amount of brood the more pollen foraging takes place. Again, we don't care about the pollen, per se. It is the act of *pollen foraging* that matters.

Brood then reflects two things. It tells us that a certain level of pollen foraging will be sustained, and it further indicates a level of adult population. The presence of six frames with brood indicates a probable supporting population on the order of 30,000 bees.

One remaining factor here is the size of the hive. Two full depth hive bodies are strongly recommended. This gives ample space for the existing population plus additional room for expansion. Congestion and swarming behaviors are reduced. Swarming, of course, would put a serious crimp in the population and their capability to field a maximum foraging force.

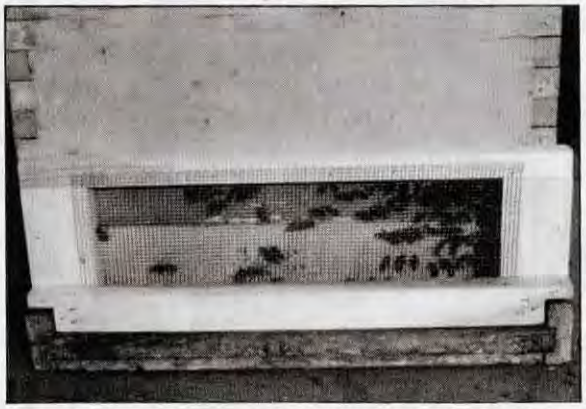
Further, all drawn comb rather than foundation allows for a smaller house-bee population. If foundation were present, bees would be required to secrete wax and draw out that foundation.

AVAILABILITY

Preparation must start the previous season if colonies meeting the standards are to be ready in the spring or early summer. That is, the colonies must be overwintered. It has been well demonstrated that for *most* of the country and for *most* crops, a colony made up in the current season from a package or from a nuc does not meet those standards. There just isn't time for a new colony to become established and build up to an acceptable level.

As an example, consider a three pound package installed in mid-April. Here we are starting off with roughly 10,000 bees. The queen begins to lay in the days immediately following installation, but no new bees will emerge until three weeks after that first egg.

Meanwhile, during those three weeks, some of the original bees from the package are dying as they reach the end of their natural life. The net result is a loss of population during the first month or so of a package colony's existence. We can reasonably say that the colony will not have built its population anywhere near the requisite 30,000 bees by the time apples and blueberries, for instance, are in bloom.



Be sure the entrances are tightly screened before starting to hammer in the hive staples. A piece of wire mesh makes a simple entrance closure. A couple of staples will keep it from vibrating loose. A screened porch helps reduce the sense of confinement for the bees.

A nucleus colony will do better than a package, but even so, experience has shown that a three or four frame nuc started in the spring will not get its population up to the desired number in time. One of the problems attendant with either a package or a nuc, one that we seldom think about in any context, is that a new, young queen starts slowly. She does not reach her full egg laying potential of 1000 to 1500 eggs per day until after several weeks.

This brings us back to overwintered colonies. Here, too, we have some uncertainties. The number of colonies available in the fall when pollination agreements are often made can be considerably different from the number available the following spring after winter. When you make commitments to provide colonies, consider your past experience with overwintering. Can you reasonably expect to have the agreed upon number of quality pollinating hives available when bloom time rolls around?

MOVING

Over the years I have been told a variety of stories about moving bees for pollination. Some were sad, some were funny, some just reflections of poor preparation or lack of knowledge. From my own experience and from these stories I have a couple of recommendations.

Most tales about moving colonies involve the problems that arise from stumbling

Continued on Next Page

GETTING THERE ... Cont. From Pg. 205

around in bee yards and pollination sites in the dark. I used to do that, but orchards, blueberry barrens, and the like can offer some rough terrain. I prefer to navigate such places in daylight. After a couple of nighttime moves, I changed my system. I go to the hives at dusk, just after the bees are in for the night, and screen and staple everything. Then I go home to bed. Soon after dawn I load the bees and head for the pollination site. I get a good night's sleep and the bees are confined for only two or three hours of daylight.

Of course, screening is an ***absolute*** requirement. When moving bees at night, you may get away without it, but you're taking a chance. There are too many opportunities for mishap – flat tires, mud holes, steep hills, or just plain lost. Stopping for any of these gives unscreened bees a chance to come out. They will, and even more so if there is any light nearby. If you stop at a gas station or a diner, for instance, many of the bees will fly. Then when you drive away there will be a cloud of bees left behind to terrorize the populace and bring bad repute to beekeepers everywhere.

> "Moving colonies may be the most public 'Public Relations' activity you ever undertake."

Secure screening, then, is a must. Large operators dealing with truckloads of bees find it easiest to throw netting over the entire load, leaving individual colonies open. But for just a few hives, wire mesh on each hive is the thing. Window screening will do but it tends to be too flexible. I prefer 1/8" galvanized mesh. Cut a strip about 2" wide by the width of your hive entrance, usually about 14-3/4" Fold the mesh lengthwise to a vee and slip it into the opening, folded edge first. Staple it to the bottom board to hold it in place. Otherwise, vibrations from the moving vehicle may cause it to slip out. Do not close down or reduce the hive entrance before screening. The bees need ventilation. Put pieces of mesh or screening over any other entrances or openings in the hive. Smaller cracks can be covered with duct tape. It is surprising how small an opening a bee can squeeze through when determined. If you do not have the hive securely screened, you will find it covered with escaped bees when you reach your destination.

Once the screening is in place, staple or strap the hive together. Do not depend on propolis or the hive's apparent integrity to hold things together. Fastening is a ***must***. If the hive shakes apart during the trip, again, you will find it covered with bees when you arrive. That's assuming it didn't fall apart altogether.

If the weather is especially hot, or if you expect the bees to be confined for more than a few hours en route, consider a hive top ventilating screen. I use it without an inner cover, and in very hot weather without the outer cover. Further, with this screen in place, the bees are much calmer when they reach their destination. They don't like being confined, and the screen seems to reduce their sense of confinement.

At the destination I smoke the entrance heavily, then pull out the entrance screen, simultaneously throwing a handful of grass across the opening to slow the bees' exit. This does two things. It keeps them from chasing me if they are overly upset, and it causes them to look around a little more closely at their new surroundings, helping them to become oriented to this new location. If you stay around to watch, you should see indications of orientation and foraging behavior almost within minutes.

Now that you have them safely set up in this new location, your extra care in getting them ready and moving them should ensure they do a good job, leading to an invitation for you to bring them back next year. ○

GEORGIA ON MY MIND

keith delaplane

Georgia Is Kind To Beekeepers, There's Something Here For Everyone.

In my thirteenth year as a youngster in Indiana, my parents bought me a beginning beekeeping kit – a box of exploded hive parts, budget-grade veil and smoker, thin cloth gloves, a little how-to book, and a certificate for, of all things, a package of bees to come in the mail. I was doubtful at best, remembering some bad experiences with mail-order ants – the kind that go with those plastic ant farms where the ants live three weeks before they curl up and die. But I sent in the certificate anyway. My bee kit came in the dead of winter, so I had lots of time to put the hive together and look forward to spring when my bees would arrive. And one day in May, the mailman honked his horn from the road, and I burst out the door and met my first package of bees. With a sense of disbelief, I gingerly carried it inside and looked it over real good. It had a funny, musty, sort of pleasant smell, and the bees seemed contented enough. It was heavier than I thought it would be, and it was covered with all sorts of labels and instructions. And the return address was from Georgia.

That was my first hint that Georgia was a big name in the beekeeping business. Unlike my ant farms, the bees were a success, and eventually I subscribed to bee magazines and went to bee meetings. And everywhere I went I heard about Georgia. The queen and package bee advertisements bristled with city names like Baxley, Claxton, Hahira, Jesup, Moultrie, and Mount Vernon. Most of the bees and queens I bought in the following years came from the Peach State. When I got older and started thinking about careers, I scanned the employment ads for a beekeeping job in Georgia – an endeavor that came true, in a sense.

My love affair with bees led me to graduate school in entomology where I learned that Georgia was also a prestigious center of university research in apiculture. And in 1989 when I graduated for the last time, it seemed almost fitting that I took a job as Extension Apiculturist at The University of Georgia.

And it has been exhilarating to live, to work, and to keep bees in Georgia – the largest state east of the Mississippi and the supplier of bees to the world. But those who know Georgia only for its queens and package bees are surprised to learn of the incredible geologic and climatic diversity of this state. Accordingly, the beekeeping industry is diverse, encompassing everything from backyard hobbyists, crop pollinators, professional honey producers, to those well known queen and package bee producers. It all happens in Georgia, and most of it happens in May.

Dr. Keith Deleplane is Assistant Professor of Entomology, Cooperative Extension Service, The University of Georgia, Athens, GA 30602

Continued on Next Page

Georgia's Blue Ridge Mountains are one of the few areas in the country that produce sourwood honey.

GEORGIA ... Cont. From Pg. 207

Georgia is roughly divided into three geographic regions. The Blue Ridge mountains cut through the northeast; this region has a cooler temperate climate. The middle of the state is the piedmont; a region of rolling hills, agriculture, and forests. The southern third of Georgia is the flat, mild-weathered coastal plain. This is the region of heaviest agriculture, including beekeeping. Beekeepers in these different regions might as well belong to different continents, because the objectives, timetables, and flora differ considerably.

In 1991, Georgia ranked fourteenth among states in honey production – not a remarkable statistic. But, this figure does not consider the enormous nectar flows that are converted into bees to drive the package bee industry. For these large producers, honey is by far a secondary product, and they concern themselves with honey only after the package season is safely behind them. Considering these unrecorded nectar flows, Georgia's honey production potential is large. Unlike the major honey producing states that rely on vast acreages of cultivated legumes, Georgia's honey producers rely mostly on non-cultivated, feral plants. As such, the variety of Georgia's honeys is large, including no less than nine distinguishable types. Understandably, Georgians learn the differences and develop loyalties to their local honey varieties. That is why, for example, sourwood honey rarely gets out of the Appalachians.

Georgia's diversity of feral honey plants has generated a small intrastate migratory industry. Since tulip poplar and gallberry bloom in May and sourwood blooms in June, beekeepers can move hives to different regions and maximize the size and variety of their crops.

Let's look at typical beekeeping routines in three regions of Georgia...

In north Georgia, everything revolves around the sourwood flow. Sourwood is a slender, native tree that tolerates higher elevations. It blooms from mid-June through August. The honey is usually very light, although this is variable, and the flavor is rich and distinctive. To top it off, sourwood granulates slowly and has an excellent shelf life. No wonder beekeepers go to great pains to collect it. With an eye toward mid-June, beekeepers start stimulative feeding and medicating around February and March. By the first of April, queens and package bees are available for making up winter losses or splits. By feeding, equalizing, and medicating new colonies, north Georgia beekeepers get them to production strength in time for June sourwood. Mature, overwintered colonies collect surplus "early" honey from blackberry, clover, sumac, and tulip poplar in May. Because these early honeys are darker than sourwood, beekeepers try to keep the two separate. They remove and harvest all supers after May and resuper for the sourwood bloom, or, if they are migratory, wait until sourwood is under way before they move in their hives. This requires a bit of skill and experience. Sometimes, for example, sumac (a dark amber honey) overlaps sourwood bloom by a week or two, and as one Georgia beekeeper

Ty ty is one of the earliest dependable nectar flows in south Georgia.

says, "When you mix dark honey with light honey, you get dark honey." Some beekeepers wait until sumac is good and gone, even if they must sacrifice gross yield, before they super up for sourwood. Most sourwood is sold in the regions in which it is produced. Part of the culture and ambience of southern Appalachia is the sign "Sourwood Honey" at a roadside store.

Moving south, we come next to the piedmont, considered by many a marginal area for beekeeping. Compared to the bounty of other regions that may be so, but the piedmont still has a lot to offer. For one thing, it contains most of Georgia's beekeepers, thanks to metro Atlanta's burgeoning population of hobbyists, and it's no secret that hobbyists provide the spark of enthusiasm to our industry. The piedmont revolves around May blackberry, clover, and tulip poplar flows. Like their counterparts in the mountains, piedmont beekeepers begin feeding and medicating in February. Splits and packages can be set up in April, but it's difficult to get these to production strength in time for the May flows. To make it worse, after May the honey season is over. That's why the piedmont is home to most of Georgia's intra-state migratory beekeepers. By moving hives to the mountains in June, piedmont beekeepers can catch sourwood crops, even from first-year colonies.

Tulip poplar trees are the most consistent honey plant of the piedmont. Although it tastes quite good, the dark color is a turnoff to a number of buyers. In some years, blackberry and red clover produce good crops. If this coincides with a light tulip poplar flow, piedmont beekeepers may experience a welcome surprise – a crop of light honey. Interestingly, some local pockets in the piedmont are extraordinarily rich in honey quantity and variety. I know of at least two regions in the central piedmont dense with sourwood trees and miles away from the Blue Ridge mountains.

As we move south into the coastal plain we find the heaviest concentration of beekeeping in the state, the domain of the queen and package bee producers and the gallberry – Georgia's primary honey plant. Beekeeping here never really stops. With mild winters, bees are active yearround, and beekeepers must constantly keep an eye on food stores. Pollen flows and brood rearing begin as early as December, and swarm prevention begins as early as March. Spring ty ty is the earliest sizable nectar flow; its March blooms fuel the rapidly growing colonies for the imminent package season.

Queen and package producers spend the brief winter feeding bees, building packages and cages, and taking orders. In February they begin rearing queen cells, and by late February and early March they make packages of bees from strong colonies and use them to set up baby 'nucs' – miniature colonies used to house young queens during their mating season. When the first batch of queen cells is ripe, each one is put inside a baby nuc, and the young queen emerges, takes her mating flights, returns to the nuc and starts laying eggs. When the queen producer confirms she is laying, the queen is ready to sell or put in a package.

After queens are available, the producer is ready to start "shaking packages" from strong colonies. This is rarely possible before the last week in March. Usually two crews are required. One crew looks for the queen in each colony and sets her apart from the rest of the hive. The next crew can then follow, shake bees off the combs and down a funnel into a package, and not have to worry about finding the queen in the parent colony.

Continued on Next Page

Take a drive along a south GA highway and you will likely see mating yards like this – hundreds of little nucs that house young queens during their mating season.

Shaking packages.

GEORGIA ... Cont. From Pg. 209

Each package later receives a new caged queen, a can of syrup, and – a necessity of modern beekeeping – a miticide strip to guard against Varroa mites. For package bee and queen producers, it's full speed ahead in April and May as beekeepers all over the world gear up for summer nectar flows. Georgia bees are indeed all over the world; one of the largest customers recently was Kuwait as it rebuilt its bee industry after the Iraqi invasion.

The incredible gallberry flow is sometimes overlooked in the bustle of package bee season. Coming in May, gallberry is almost a nuisance to package bee producers. It's too late to fuel population growth for packages, and dripping combs, heavy with raw nectar, drench bees during the shaking process. In fact, shakers must carefully avoid sticking, rolling, or even drowning bees during heavy gallberry flows. But for honey producers, gallberry is a bonanza. It is a premium honey, light colored, mild flavored, and distinctive. It is consistently Georgia's highest yielding honey plant. But, like most areas in the state, it happens in May. If your bees aren't ready by the first of May, you won't get a gallberry crop.

After May, beekeeping slows down a bit in south Georgia. Honey producers are busy extracting and marketing their crops, but queen and package producers start looking to next year. After peak season, queen and package outfits begin requeening every hive – a process that may take the rest of the summer. But the payoff is worth it when next spring they have overwintered colonies busting with bees for the new package season, thanks to those young queens. Summer isn't very exciting in south Georgia beekeeping. Palmetto is an intermittent honey plant, but for the most part it's time to feed bees and watch for mites.

Commercial pollination is still in its infancy in Georgia. For years, fruit and vegetable growers enjoyed the services of "free bees", but feral populations of bees are declining due to mites and habitat destruction. County extension agents increasingly report poor fruit set. The result? Growing interest in renting colonies for pollination. This activity fits well with existing beekeeping schedules in much of the state. For instance, March apple and blueberry bloom in north Georgia comes at a time when the bees have little else to do. This is an excellent chance for additional revenue for beekeepers. In south Georgia, squash, cucumber, and watermelon growers want to rent bee hives, but this sometimes conflicts with the schedules of queen and package bee producers. And, as with any new enterprise, there is resistance among some growers to pay beekeepers adequately for their services. But these problems are surmountable with education and time, and the prognosis for a growing pollination industry in Georgia is good.

I can't finish without a word, not about Georgia, but about her beekeepers. Their generosity and downright friendliness are inspiring. My wife jokes about how I have a guest room anywhere I go in the state. There is a remarkable solidarity in the state association in spite of the vast differences between the giant south Georgia outfits and the hobbyists. I don't understand why it's that way, but I'm thankful for it.

Georgia is kind to beekeepers. From the cool mountains whose slopes shine white with sourwood to the sultry coastal plain awash in gallberry, there is something here for every kind of beekeeper.

Gallberry – the highest yielding honey plant in Georgia. This is a premium-grade honey limited to the coastal plain.

WHO'S WHO IN NORTH AMERICAN BEEKEEPING 1993

ASSN. CONTACT	INSPECTION	EXTENSION	UNIV. CONTACT	GOV. TRADE OFFICE	DEPT. OF AGR.
ALABAMA Bill Gafford 1121 Mobile Rd. Greenville, AL 36032	Mr. Guy W. Karr Dept. of Agr. & Indus. P.O. Box 3336 Montgomery, AL 36193 Ph. (205) 242-2656	Eric Benson 206 Extension Hall Auburn University Auburn, AL 36849-5629 Ph. (205) 844-6393	Eric Benson 206 Extension Hall Auburn University Auburn, AL 36849-5629 Ph. (205) 844-6393	Alabama Development Off. 401 Adams Ave. Montgomery, AL 36130 (205) 242-0400	Mr. A.W. Todd 1445 Federal Drive P.O. Box 3336 Montgomery, AL 36109-0336 Ph. (205) 242-2650
ALASKA Fletcher Miller Box 140173 Anchorage, AK 99508 Ph. (907) 338-4694	Mr. Doug Warner AK Dept. of Nat. Resources P.O. Box 949 Palmer, AK 99645-0949 Ph. (907) 745-7200	Wayne Vandre Cooperative Extension Ser. 2221 E. No. Lights Blvd., Ste. 118 Anchorage, AK 99508-4143 Ph. (907) 279-6575	Wayne Vandre Cooperative Extension Ser. 2221 E. No. Lights Blvd., Ste. 118 Anchorage, AK 99508-4143 Ph. (907) 279-6575	Dept. of Commerce & Econ. Dev. P.O. Box 110800 Juneau, AK 99811-0800 (907) 465-2500	Mr. John Cramer P.O. Box 949 Palmer, AK 99645-0949 Ph. (907) 745-7200
ARIZONA Barbara Stockwell Box 368 Arivaca, AZ 85601 Ph. (602) 398-9400	Mr. Brett E. Cameron AZ Com. of Agr. & Hort. 1688 West Adams, Rm 417-C Phoenix, AZ 85007 Ph. (602) 542-0970	Dr. Leon Moore Ent. Dept., UA Tucson, AZ 85721 Ph. (602) 621-7205	Dr. Eric H. Erickson Carl Hayden Bee Res. Ctr. 2000 E. Allen Road Tucson, AZ 85719 Ph. (602) 629-6380	Director of International Trade 3800 N. Central Ave. Suite 1500 Phoenix, AZ 85012 (602) 280-1371	Mr. Keith Kelly 1688 West Adams, Phoenix, AZ 85007 Ph. (602) 542-4373
ARKANSAS Anna Coy Rt. 1, Box 157A Jonesboro, AR 72401 Ph. (501) 932-0034	Mr. Donald E. Bailey AR State Plant Board No. 1 Natural Resources Dr. Little Rock, AR 72205 Ph. (501) 225-1598	Dr. Don Johnson P.O. Box 391 Little Rock, AR 72203 Ph. (501) 671-2000, Ext. 2229	Dr. Lloyd Warren 4333 Bridgewater Lane Fayetville, AR 72703 Ph. (501) 521-9072	International Marketing 1 State Capitol Mall Little Rock, AR 72201 (501) 682-1121	Mr. Gerald King P.O. Box 1069 Little Rock, AR 72203 Ph. (501) 225-1598
CALIFORNIA Carol Penner 19980 Pine Creek Road Red Bluff, CA 96080	CA Dept. of Food & Agr. 1220 N. Street, Rm A-357 Sacramento, CA 95814 Ph (916) 445-0984	Dr. Eric Mussen Dept. of Entomology University of CA - Davis Davis, CA 95616 Ph. (916) 752-0472	Dr. Norman Gary Dept. of Entomology University of CA - Davis Davis, CA 95616 Ph. (916) 752-0470	CA State World Trade Commission 1121 L St. Suite 310 Sacramento, CA 95814 (916) 324-5511	Mr. Henry J. Voss 1220 N. Street, Suite 409 Sacramento, CA 94271-0001 Ph. (916) 654-0433

ASSN. CONTACT	INSPECTION	EXTENSION	UNIV. CONTACT	GOV. TRADE OFFICE	DEPT. OF AGR.
COLORADO Mrs. Helen Jones 605 No. Columbus Yuma, CO 80759	Mr. Leslie A. Zermuehlen CO State Dept. of Agr. 700 Kipling St., Suite 4000 Lakewood, CO 80215-5894 Ph. (303) 239-4140	Dr. Whitney Cranshaw Enotomology Dept. CSU Fort Collins, CO 80523	Whitney Cranshaw c/o CO State University Ft. Collins, CO 80523	International Trade Office 1625 Broadway Suite 680 Denver, CO 80202 (303) 892-3850	Dr. Steven W. Horn 700 Kipling Street Suite 4000 Denver, CO 80215 Ph. (303) 239-4100
CONNECTICUT Diann Baldwin 156 Highland Ave. Middletown, CT 06451 Ph. (203) 347-1306	Carol R. Lemmon CT Agr. Exp. Station 123 Hunting St. P.O. Box 1106 New Haven, CT 06504 Ph. (203) 789-7236	Dr. Louis Magnarelli CT Agr. Experiment Sta. 123 Huntington St., P.O. Box 1106 New Haven, CT 06504 Ph. (203) 789-7241	Dr. Louis Magnarelli CT Agr. Experiment Sta. 123 Huntington Street New Haven, CT 06504 Ph. (203) 789-7236	International Division 865 Brook St Rocky Hill, CT 06067-3405 (203) 258-4256	Mr. John J.C. Herndon 165 Capitol Ave., Rm. 273 Hartford, CT 06106 Ph. (203) 566-4667
DELAWARE John S. Tullocholds P.O. Box 473 Odessa, DE 19730	Mr. Robert Mitchell DE Dept. of Agr. 2320 South DuPont Highway Dover, DE 19903 Ph. (302) 739-4811	Dr. Dewey Caron Entomology Dept. University of Delaware Newark, DE 19717-1303 Ph. (302) 831-2526	Dr. Dewey Caron Entomology Dept. University of Delaware Newark, DE 19717 Ph. (302) 451-2526	Delaware Development Office 99 Kings Highway P.O. Box 1401 Dover, DE 19903 (302) 739-4271	Mr. William B. Chandler, Jr. 2320 South DuPont Highway Dover, DE 19901 Ph. (302) 739-4811
FLORIDA Eloise Cutts 2237 NW 16th Ave. Gainseville, FL 33156 Ph. (904) 378-7719	Mr. Laurence P. Cutts FL State Dept. of Agr. Doyle Conner Bldg., Box 1269 Gainesville, FL 32602 Ph. (904) 372-3505	Dr. Tom Sanford University of Florida 0740 IFAS, Building 970 Gainesville, FL 32611-0740 Ph. (904) 392-1801, ext. 143	Dr. Tom Sanford University of Florida 0740 IFAS, Building 970 Gainesville, FL 32611-0740 Ph. (904) 392-1801	Div. of Intl. Trade & Dev. Collins Building 107 W. Gaines, Room 366 Tallahassee, FL 32399-2000 (904) 488-6124	Mr. Robert Crawford The Capitol Tallahassee, FL 32399-0810 Ph. (904) 488-3022
GEORGIA Mr. Sonny Swords 5 - 28th Ave., NW Moultrie, GA 31768 Ph. (912) 985-9725	Mr. James Harron GA Dept. of Agr. 19 Martin Luther King Dr., # 550 Atlanta, GA 30334 Ph. (404) 656-3641	Dr. Keith Delaplane Dept. of Entomology University of Georgia Athens, GA 30602 (706) 542-1765	Dr. Al Dietz Dept. of Entomology University of Georgia Athens, GA 30602 Ph. (404) 542-8711	Dept. of Industry, Trade & Tour. P.O. 1776 Atlanta, GA 30301 (404) 656-3581	Mr. Thomas T. Irvin Capitol Square Atlanta, GA 30334 Ph. (404) 656-3600
HAWAII Lee Ong Chun 2115 N. School St. Honolulu, HI 96819 Ph. (808) 841-6440	Dr. Thomas W. Culliney HI Dept. of Agr. P.O. Box 22159 Honolulu, HI 96823-2159 Ph. (808) 973-9529	Ronald Mau 3050 Maile Way, UH, Manoa, Gilmore Hall 307-D Honolulu, HI 96822 Ph. (808) 956-7063	Dr. Patricia Couvillon University of Hawaii 1993 East West Rd. Honolulu, HI 96822 Ph. (808) 956-4761	Dept. of Business, Economic Dev. & Tourism P.O. Box 2359 Honolulu, HI 96804 (808) 587-2750	Dr. Calvin W.S. Lum 99-762 Moanalua Rd. Aiea, HI 96701 Ph. (808) 487-5351
IDAHO Jim Ellis 3615 W. Idaho Blvd. Emmett, ID 83617 Ph. (208) 365-2732	Michael Cooper ID Dept. of Agr. 2270 Old Penitentiary Rd. Box 790 Boise, ID 83701 Ph. (208) 334-2986	Dr. Roger Vega ID Dept. of Agr. P.O. Box 790 Boise, ID 83701 Ph. (208) 334-2986	Dr. Roger Vega ID Dept. of Agr. P.O. Box 790 Boise, ID 83701 Ph. (208) 334-2986	Department of Commerce 700 W. State St. State House Mail Boise, ID 83720-2700 (208) 334-2470	Dr. W.G. Nelson P.O. Box 790 Boise, ID 83701 Ph. (208) 334-3240
ILLINOIS Rita Taylor Rt. 2, Box 249 Pleasant Plains, IL 62677 Ph. (217) 626-1319	Mr. Scott Beam P.O. Box 19281 Fairgrounds Springfield, IL 62794-9281 Ph. (217) 782-4944	E. E. Killion Dept. of Entomology University of Illinois Urbana, IL 61801	Dr. Gene Robinson Dept. of Entomology 320 Morrill Hall Urbana, Il 61801 Ph. (217) 333-2910	Vacant	Dr. Arnold Taft P.O. Box 19281, State Fairgrounds Springfield, IL 62794-9281 Ph. (217) 782-4944
INDIANA Claude F. Wade 402 W., Washington, Rm 209 Indianapolis, IN 46204 Ph. (317) 232-4120	Mr. Claude F. Wade Dept. of Nat. Resources 402 W. Washington, Rm 290 Indianapolis, IN 46204 Ph. (317) 232-4120	Wayne Buhler Entomology Department Purdue University W. Lafayette, IN 47907 Ph. (317) 494-4912	Bill Fischang Entomology Department Purdue University W. Lafayette, IN 47907 Ph. (217) 465-4923	Department of Commerce One North Capitol Ave. Suite 700 Indianapolis, IN 46204-2288 Ph. (317) 232-8845	Mr. Terry D. Strueh 1140 Agricultural Adm. Bldg. West Lafayette, IN 47907-1140 Ph. (317) 494-8392
IOWA Dan Sowers Rt. #2 Maxwell, IA 50161 Ph. (515) 387-8814	Mr. Robert Cox IA Dept. of Agr. Wallace Building Des Moines, IA 50319 Ph. (515) 281-5736	Donald R. Lewis Dept. of Entomology ISU – Insectary Building Ames, IA 50011 Ph. (515) 294-1101	Donald R. Lewis Dept. of Entomology ISU – Insectary Building Ames, IA 50011 Ph. (515) 294-1101	International Trade Dept. of Economic Development 200 E. Grand Ave. Des Moines, IA 50309-1819 (515) 242-4700	Mr. Dale M. Cochran Wallace Building Des Moines, IA 50319 Ph. (515) 281-5322
KANSAS Joli Weiner 8833 Quivera Rd. Overland Park, KS 66215 Ph. (913) 492-1670	Mr. Gary R. Ross KS State Board of Agr. 901 S.Kansas Ave. Topeka, KS 66612-1281 Ph. (913) 296-2263	C. Michael Smith Entomology Dept. 123 Waters Hall, KSU Manhattan, KS 66506 Ph. (913) 532-6154	Dr. Orley Taylor University of Kansas Dept. of Entomology Lawrence, KS 66045 Ph. (913) 864-4051	Kansas Dept. of Commerce 400 SW 8th St. Suite 500 Topeka, KS 66603-3957 (913) 296-3483	Mr. Sam Brownback 109 SW 9th Street Topeka, KS 66612-1280 Ph. (913) 296-3558

ASSN. CONTACT	INSPECTION	EXTENSION	UNIV. CONTACT	GOV. TRADE OFFICE	DEPT. OF AGR.
KENTUCKY John E. Young 317 Lee Drive. Stanford, KY 40484	Dr. Thomas Webster Community Research Service Kentucky State University Frankfort, KY 40601 Ph. (502) 227-6351	Dr. Thomas Webster Community Research Service Kentucky State University Frankfort, KY 40601 Ph. (502) 227-6351	Dr. Thomas Webster Community Research Service Kentucky State University Frankfort, KY 40601 Ph. (502) 227-6351	Office Of International Marketing KY Cabinet for Economic Dev. Capitol Plaza Tower, 24th Floor Frankfort, KY 40601 (502) 564-2170	Mr. Ward "Butch" Burnette 712 Capital Plaza Tower Frankfort, KY 40601 Ph. (502) 564-4696
LOUISIANA Jim Stotts 222 Lyons St. Lafayette, LA 70506	Mr. Jimmy Dunkley P.O. Box 3118 Baton Rouge, LA 70821-3118 Ph. (504) 925-7772	Dr. Dale Pollet, Ent. Specialist LA Cooperative Extension Service LA State Univ. 202 B Knapp Hall Baton Rouge, LA 70803 Ph. (504) 388-2180	Dr. Thomas Rinderer 1157 Ben Hur Rd. Baton Rouge, LA 70820 Ph. (504) 766-6064	LA Dept. of Economic Dev. P.O. Box 94185 Baton Rouge, LA 70804-9185 (504) 342-5361	Mr. Robert F. Odom P.O. Box 631 Baton Rouge, LA 70821-0631 Ph. (504) 922-1234
MAINE Bill Truesdell RR 2, Box 26 Bath, ME 04530 Ph. (207) 443-1498	Anthony Jadczak ME Dept. of Agr. Division of Plant Industry Augusta, ME 04333 Ph. (207) 289-3891	Anthony Jadczak Dept. of Agriculture Div. of Plant Industry August, ME 04333 Ph. (207) 289-3891	Anthony Jadczak Dept. of Agriculture Div. of Plant Industry August, ME 04333 Ph. (207) 289-3891	Dept. of Economic & Com. Dev. State House, Station 59 Augusta, ME 04333 (207) 289-2656	Mr. Bernard W. Shaw Deering Building (AMHI) State House, Station 28 Augusta, ME 04333 Ph. (207) 289-3871
MARYLAND Sandra R. Crow 7200 Crain Hwy. Upper Marlboro, MD 20772 Ph. (301) 627-3055	Mr. I. Barton Smith, Jr. MD Dept. of Agr. 50 Harry S. Truman Parkway Annapolis, MD 21401 Ph. (410) 841-5920	Gordon Allen-Wardell University of Maryland Entomology Department College Park, MD 20742 Ph. (301) 405-3953	Gordon Allen-Wardell University of Maryland Entomology Department College Park, MD 20742 Ph. (301) 454-3848	Dept. of Economic & Com. Dev. 100 Community Place Crownsville, MD 21032 (301) 514-7000	Mr. Robert L. Walker 50 Harry S. Truman Parkway Annapolis, MD 21401 Ph. (301) 841-5880
MASSACHUSETTS Ted Shylovsky 192 Boston Post Rd. Sudbury, MA 01776-3102 Ph. (508) 443-7195	Mr. Alfred R. Carl, Jr. Dept. of Entomology University of MA Amherst, MA 01003 Ph. (413) 545-1257	Richard Bonney Dept. of Entomology University of MA Amherst, MA 01003 Ph. (413) 545-2284	Richard Bonney Dept. of Entomology University of MA Amherst, MA 01003 Ph. (413) 545-2283	MA Office of Business Dev. 100 Cambridge St. Boston, MA 02202 (617) 727-3206	Mr. Gregory Watson 100 Cambridge Street Boston, MA 02202 Ph. (617) 727-3020
MICHIGAN Mary Sutherland 5488 Warren Rd. Ann Arbor, MI 48105 Ph. (313) 668-8568	Mr. Michael G. Hansen Pesticide & Plant Pest Mgt. 4032 M-139, Bldg. 116 St. Joseph, MI 49085 (616) 428-2575	Dr. R. Hoopingarner Michigan State University Entomology Department E. Lansing, MI 48824-1115 Ph. (517) 353-8136	Dr. R. Hoopingarner Michigan State University Entomology Department E. Lansing, MI 48824 Ph. (517) 353-8136	Marketing & Market Dev. Div. P.O. Box 30017 Lansing, MI 48909 (517) 373-1058	Mr. Bill Schuette 611 W. Ottawa Box 30017 Lansing, MI 48909 Ph. (517) 373-1050
MINNESOTA Fred Holte Rt. 1 43480 Andee Harris, MN 55032 (612) 689-1065	Blane White MN Dept. of Agr. 90 West Plato Boulevard St. Paul, MN 55107-2094 Ph. (612) 296-0591	Dr. Marla Spivak Dept. of Entomology University of MN St. Paul, MN 55101 Ph. (612) 624-4798	Dr. Marla Spivak Dept. of Entomology University of MN St. Paul, MN 55101 Ph. (612) 624-4798	N/A	Dr. Thomas J. Hagerty 90 W. Plato Boulevard St. Paul, MN 55107 Ph. (612) 296-5000
MISSISSIPPI Harry R. Fulton P.O. Box 5207 Mississippi State, MS 39762 Ph. (601) 325-3390	Harry R. Fulton MS Dept. of Agr. P.O. Box 5207 Mississippi State, MS 39762 Ph. (601) 325-3390	Dr. James Jarrat P.O. Box 5446 103 Clay Lyle Building Mississippi State, MS 39762 Ph. (601) 325-2085	Dr. Clarence Collison Head, Ent. Dept. Mississippi State, MS 39762 Ph. (601) 325-2085	Dept. of Economic & Com. Dev. P.O. Box 849 Jackson, MS 39205 (601) 359-3448 or 359-3797	Mr. Jim Buck Ross P.O. Box 1609 Jackson, MS 39215 Ph. (601) 354-7050
MISSOURI Glenn Davis 1305 SE AA Hwy. Blue Springs, MO 64015 Ph. (816) 229-2972	Mr. Joseph Francka MO Dept. of Agr. P.O. Box 630 Jefferson City, MO 65101 Ph. (314) 751-2462	Dr. Gene Munson University of Missouri 1-87 Agricultural Building Columbia, MO 65211 (314) 861-7894	N/A	Intl. Business Dev. 307 W. High Street, Room 770, P.O. Box 118 Jefferson City, MO 65102 (314) 751-4241	Mr. Tim Kelley P.O. Box 630 Jefferson City, MO 65102 Ph. (314) 751-3359
MONTANA Gloria Buhmann P.O. Box 861 Zurich, MT, 59547 Ph. (406) 357-3558	Mr. Willard Kissinger MT Dept. of Agr. Agriculture/Livestock Bldg. Helena, MT 59620 Ph. (406) 444-3730	N/A	N/A	Dept. of Commerce 1424 Ninth Ave. Helena, MT 59620 (406) 444-3923	Mr. Everett M. Snortland Capitol Station Helena, MT 59620-0201 Ph. (406) 444-3144
NEBRASKA Carol Kuch Loup City, NE 68853 Ph. (308) 745-0154	Mr. Marion Ellis NE Dept. of Agr. 301 Centennial Mall South P.O. Box 94756 Lincoln, NE 68509 Ph. (402) 471-2394	Fred Baxendale University of Nebraska 210 Plant Industries Lincoln, NE 68583-0816 Ph. (402) 472-2123	Cliff Walstrom University of Nebraska 210 Plant Industries Lincoln, NE 68583-0816 Ph. (402) 472-2123	International Division P.O. Box 94666 301 Centennial Mall South Lincoln, NE 68509-4666 (402) 471-3111 or 1-800-426-6505	Mr. Larry Sitzman 301 Centennial Mall South P.O. Box 94947 Lincoln, NE 68509 Ph. (402) 471-2351

ASSN. CONTACT	INSPECTION	EXTENSION	UNIV. CONTACT	GOV. TRADE OFFICE	DEPT. OF AGR.
NEVADA Bill Goff 14060 Edmands Dr. Reno, NV 89511 Ph. (702) 851-1888	Mr. John O'Brien NV Dept. of Agr. 350 Capitol Hill Ave., P.O. 11100 Reno, NV 89510-1100 Ph. (702) 688-1180	N/A	N/A	Dept. of Economic Development Capitol Complex Carson City, NV 89710 (702) 687-4325	Mr. Robert Grownoski 350 Capitol Hill Avenue P.O. Box 11100 Reno, NV 89510 Ph. (702) 688-1180
NEW HAMPSHIRE Michael Bayko 69 Bean Road Merrimack, NH 03054 Ph. (603) 424-5477	Dr. Siegfried E. Thewke NH Dept. of Agr. State Lab Bldg., Lab D, Hazen Dr. Concord, NH 03301 Ph. (603) 271-2561	Dr. Siegfried E. Thewke NH Dept. of Agr. State Lab Bldg., Lab D, Hazen Dr. Concord, NH 03301 Ph. (603) 271-2561	Stanley Swier College Life Sc. & Agr. Univ. of NH Durham, NH 03824 Ph. (603) 862-1159	Dept. of Resources & Econ. Dev. Office of Business & Ind. Dev. Intl. Trade, P.O. Box 856 Concord, NH 03302-0856 (603) 271-2591	Mr. Stephen H. Taylor Caller Box 2042 Concord, NH 03302-2042 Ph. (603) 271-3551
NEW JERSEY Gary L. Bradshaw 32 Hewitt Rd. Stockton, NJ 08559 Ph. (908) 996-6331	Mr. Walt Wilson NJ Dept. of Agr. P.O. Box CN330 Trenton, NJ 08625 Ph. (609) 984-2266	Dr. Louis Vasvary Entomology Dept. Rutgers University New Brunswick, NJ 08903 Ph. (908) 932-9306	N/A	Dept. of Commerce & Econ. Dev. 153 Halsey Street, 5th Floor P.O. Box 47024 Newark, NJ 07101 (201) 648-3518	Mr. Arthur R. Brown, Jr. CN330 Trenton, NJ 08625 Ph. (609) 292-3976
NEW MEXICO Mrs. Betty J. Cole 600 N. Bosque Loop Bosque Farms, NM 87068 Ph. (505) 869-2841	Ms. Marjorie Lewis NM State Dept. of Agr. P.O. Box 30005 Las Cruces, NM 88003 Ph. (505) 646-3207	Lloyd English New Mexico State Univ. Box 3AE Las Cruces, NM 88003-0001 Ph. (505) 646-2546	Lloyd English New Mexico State Univ. Box 3AE Las Cruces, NM 88003-0001 Ph. (505) 646-2546	Economic Dev. Dept. Trade Div. – Montoya Bldg. 1100 St. Francis Drive Santa Fe, NM 87503 (505) 827-0380	Mr. Frank A. DuBois P.O.Box 3189 Las Cruces, NM 88003 Ph. (505) 646-3007
NEW YORK Judith A. Doan 1263 Redman Rd. Hamlin, NY 14464 Ph. (716) 964-3121	Mr. Robert J. Mungari NY State Dept. of Agr. & Markets 1 Winners Circle, Capital Plaza Albany, NY 12235 Ph. (518) 457-2087	Dr. Roger A. Morse Cornell University Dyce Lab, 2130 Comstock Hall Ithaca, NY 14853 Ph. (607) 255-7723/5443	Dr. Roger A. Morse Cornell University Dyce Lab, 2130 Comstock Hall Ithaca, NY 14456 Ph. (607) 255-7723/5443	Dept. of Economic Dev. 1515 Broadway, 51st Floor New York, NY 10036 (212) 827-6100	Mr. Donald Butcher One Winners Circle Capitol Plaza Albany, NY 12235 Ph. (518) 457-4188
NORTH CAROLINA Bob Haas 2317 Old Chapel Hill-Hillsbor. Rd. Hillsborough, NC 27278-8710 Ph. (919) 732-3833	Mr. Logan Williams NC Dept. of Agr. P.O. Box 27647 Raleigh, NC 27611 Ph. (919) 733-6930	Dr. John Ambrose NC State University P.O. Box 7626 Raleigh, NC 27695-7626 Ph. (919) 515-3183	Dr. John Ambrose NC State University P.O. Box 7626 Raleigh, NC 27695 Ph. (919) 737-3140	Department of Commerce International Trade Division 430 North Salisbury Street Raleigh, NC 27611 (919) 733-7193	Mr. James A. Graham P.O. Box 27647 Raleigh, NC 27611 Ph. (919) 733-7125
NORTH DAKOTA C. Nix P.O. Box 396 Valley City, ND 58072 Ph. (701) 845-0584	Ms. Judy Carlson ND Dept. of Agr. 600 E. Blvd., 6th Floor Bismarck, ND 58505-0020 Ph. (701) 224-4997	Dean McBride ND State University Dept. of Entomology, Hultz Hall Fargo, ND 58105 Ph. (701) 237-7581	Dean McBride Holtz Hall, NDSU Fargo, ND 58105 Ph. (701) 237-8944	ND World Trade, Inc. 1833 E. Bismarck Expressway Bismarck, ND 58504 (701) 221-5336	Ms. Sarah Vogel 600 East Boulevard, 6th Floor State Capitol Bismarck, ND 58505-0020 Ph. (701) 224-2231
OHIO Jim Thompson 8227 Eby Rd. Smithville, OH 44677 Ph. (216) 669-3352	Mr. Gordon Rudloff OH State Dept. of Agr. 8995 East Main Street Reynoldsburg, OH 43068-3399 Ph. (614) 866-6361	Dr. James Tew ATI-Ohio State University 1328 Dover Road Wooster, OH 44691 Ph. (216) 263-3684	Dr. Brian Smith 1735 Neil Ave. Columbus, OH 43210 (614) 292-0465	OH Dept. of Development International Trade Division P.O. Box 1001 Columbus, OH 43266-0101 (614) 466-5017	Mr. Fred L.Dailey 65 S. Front Street Columbus, OH 43215 Ph. (614) 466-2737
OKLAHOMA Dorothy Smith P.O. Box 34 Guthrie, OK 74044 Ph. (405) 282-4002	Mr. Sancho M. Dickinson, III OK Dept. of Agr. 2800 North Lincoln Blvd. Oklahoma City, OK 73105 Ph. (405) 521-3864	Stanley Coppack Oklahoma State University Dept. of Entomology Stillwater, OK 74078 Ph. (405) 744-5527	Dr. William A. Drew Ent. Dept OK State Univ. Stillwater, Ok 74078 Ph. (405) 624-5527	OK Dept. of Commerce International Trade & Invest. 6601 Broadway Extension Oklahoma City, OK 73116 (405) 841-5217	Mr. Gary Sherrer 2800 North Lincoln Oklahoma City, OK 73105 Ph. (405) 521-3868
OREGON Phyllis Shoemaker 1874 Winchester NW Salem, OR 97304 Ph. (503) 364-8401	Mr. David W. Turner OR Dept. of Agr. 635 Capitol Street, N.E. Salem, OR 97310-0110 Ph. (503) 378-3774	Dr. D.M. Burgett Oregon State University Entomology Department Corvallis, OR 97331 Ph. (503) 737-4896	Dr. D.M. Burgett Oregon State University Entomology Department Corvallis, OR 97331 Ph. (503) 737-4896	Dept. of Economic Dev. One World Trade Center 121 SW Salmon, Suite 300 Portland, OR 97204 (503) 229-5625 800-448-7512 (OR)	Mr. Bruce Andrews 635 Capitol Street, NE Salem, OR 97310-0110 Ph. (503) 378-4152
PENNSYLVANIA Yvonne Crimbring R.D. 1, Box 315 Canton, PA 17724 Ph. (717) 673-8201	Mr. James Steinhauer Dept. of Agriculture 2301 North Cameron St. Harrisburg, PA 17110 Ph. (717) 787-4843	Mary Ann Tomasko 504 ASI Bldg. Dept. of Ent. PA State Univ. University Park, PA 16802 Ph. (814) 865-4621	Dr. Robert Berthold Delaware Valley College Doylestown, PA 18901 Ph. (215) 345-1500	Department of Commerce Office of International Dev. 464 Forum Bldg. Harrisburg, PA 17120 (717) 787-7190	Mr. Boyd E. Wolff 2301 North Cameron Street Harrisburg, PA 17110-9408 Ph. (717) 772-2853

ASSN. CONTACT	INSPECTION	EXTENSION	UNIV. CONTACT	GOV. TRADE OFFICE	DEPT. OF AGR.
RHODE ISLAND Bernard Bieder 140 Coldbrook Rd. Warwick, RI 02888 Ph. (401) 463-8654	Dr. Kerwin E. Hyland Univ. of RI Biological Science Center, B-114 Kingston, RI 02881 (401) 792-2650	N/A	Kathy Mallon Univ. of RI Kingston, RI 02881 Ph. (401) 792-2900	Dept. of Economic Dev. 7 Jackson Walkway Providence, RI 02903 (401) 277-2601	Mr. John Lawrence 22 Hayes Street Providence, RI 02908 Ph. (401) 277-2781
SOUTH CAROLINA William L. Baker 2663 Ford St. Sumter, SC 29150	Dr. Mike Hood Dept. of Plant Industries 112 Agr. Ser. Ctr., Clemson Univ. Clemson, SC 29621 Ph. (803) 656-3106	Mike Hood Clemson University - Long Hall 112 Agricultural Servicenter Clemson, SC 29621 Ph. (803) 656-3106	Mike Hood Clemson University 112 Agricultural Servicenter Clemson, SC 29621 Ph. (803) 656-3106	State Development Board International Division P.O. Box 927 Columbia, SC 29202 (803) 737-0400	Mr. D. Leslie Tindal P.O. Box 11280 Columbia, SC 29211 Ph. (803) 734-2210
SOUTH DAKOTA Meral Brandt Yankton, SD 57078	Mr. Robert Reiners SD Dept. of Agr. Anderson Building Pierre, SD 57501 Ph. (605) 773-3724	Murdick McLeod South Dakota State Univ. Ag Hall 246B, Box 2207A Brookings, SD 57007 Ph. (605) 688-4603	Dr. Robert Walstrom South Dakota State Univ. Brookings, SD 57006	Governor's Off. of Econ. Dev. 711 East Wells Ave. Pierre, SD 57501-3369 (605) 773-5032	Mr. Jay C. Swisher 445 Capitol Avenue Sigurd Anderson Building Pierre, SD 57501 Ph. (605) 773-3375
TENNESSEE William D. Lane 5801 Vassar St. Memphis, TN 38119 Ph. (901) 683-7494	Mr. Thomas C. Hart TN Dept. of Agr. P.O. Box 40627, Melrose Sta. Nashville, TN 37204 Ph. (615) 360-0130	John Skinner University of TN Box 1071 Knoxville, TN 37901-1071 Ph. (615) 974-7138	John Skinner University of TN Box 1071 Knoxville, TN 37901-1071 Ph. (615) 974-7138	Dept. of Economic & Com. Dev. Export Promotion Office 320 6th Ave. North Nashville, TN 37243-0405 (615) 741-8570	Mr. L.H. Ivy P.O. Box 40627, Melrose Station Nashville, TN 37204 Ph. (615) 360-0100
TEXAS Carol Marthens 1836 W. Virginia, Suite 103A McKinnery, TX 75069-4700 Ph. (214) 542-3377	Mr. Paul Jackson TX A & M University College of Agriculture College Station, TX 77843-2475 Ph. (409) 845-9713/9714	Dr. Charles Cole Texas A&M University Dept. of Ent. - Rm. 411 Heep Ctr. College Station, TX 77843-2475 Ph. (409) 845-6800	Mr. Paul Jackson TX A & M University College of Agriculture College Station, TX 77843-2475 Ph. (409) 845-9713/9714	Dept. of Commerce International Trade Division P.O. Box 12728, Capitol Station Austin, TX 78711 (512) 472-5059	Mr. Rick Perry, Commissioner P.O. Box 12847, Capitol Station Austin, TX 78711 Ph. (512) 463-7476
UTAH Jones Bee Co. 286 Andrew Lane Murray, UT 84107	Mr. Edward Bianco UT State Dept. of Agr. 350 North Redwood Road Salt Lake City, UT 84116 Ph. (801) 538-7184	Jay B. Karren Utah State University Extension Service Logan, UT 84322-5305 Ph. (801) 750-2200	Dr. William Nye Utah State Univ. Logan, UT 84332 Ph. (801) 750-2524	Div. of Comm. & Econ. Dev. 324 S. State Street, Suite 500 Salt Lake City, UT 84111 (801) 538-8700	Mr. Miles Ferry 350 N. Redwood Road Salt Lake City, UT 84116 Ph. (801) 538-7101
VERMONT David Howells 155 Dorr Dr. Rutland, VT 05701 Ph. (802) 773-7168	Mr. Steve Parise VT Dept. of Agr. 116 State Street Montpelier, VT 05602-2901 Ph. (802) 828-2431	N/A	N/A	Dept. of Economic Development 109 State Street Montpelier, VT 05609 (802) 828-3221	Mr. George Dunsmore 120 State Street Montpelier, VT 05620-2901 Ph. (802) 828-2430
VIRGINIA Rick Fell VA Tech, Price Hall Blacksburg, VA 24060	Mr. Robert Wellemyer 1100 Bank Street, Room 703 P.O. Box 1163 Richmond, VA 23209 Ph. (804) 786-3515	Dr. Richard Fell Virginia Tech Univ. Entomology Department Blacksburg, VA 24061 Ph. (703) 231-7207	Dr. Richard Fell Virginia Polytechnic Univ. Entomology Department Blacksburg, VA 24061 Ph. (703) 961-7207	Dept. of Economic Development P.O. Box 798 Richmond, VA 23206-0798 (804) 786-3791	Dr. Clinton V. Turner P.O. Box 1163 Richmond, VA 23209 Ph. (804) 786-3501
WASHINGTON Jeff Hoit 17409 Russian Rd. Arlington, WA 98223 Ph. (509) 865-2279	Mr. James Bach WA Dept. of Agr. P.O. Box 42560 Olympia, WA 98504 Ph. (206) 586-5306	Dr. Dan Mayer WA State University, IAREC Rt. 2, Box 2953A Prosser, WA 99350 Ph. (509) 786-2226	Dr. Dan Mayer Washington State University P.O. Box 30 Prosser, WA 99350 Ph. (509) 786-2226	Dept. of Trade & Economic Dev. Market & Targeted Ind. Dev. 2001 6th Ave., Suite 2600 Seattle, WA 98121 (206) 464-1743	William E. Brookreson P.O. Box 42560 Olympia, WA 98504-2586 (202) 753-5050
WEST VIRGINIA Tom Kees Rt. 5, Box 93A Fairmont, WV 26554 Ph. (304) 363-4782	Mr. Matthew E.Cochran WV Dept. of Agr. Plant Industries Division Charleston, WV 25305 Ph. (304) 558-2212	Mr. Matthew E.Cochran WV Dept. of Agr. Plant Industries Division Charleston, WV 25305 Ph. (304) 558-2212	Dr. James Amrine WV University P.O. Box 6108 Morgantown, WV 26506 Ph. (304) 293-6023	Governor's Off. of Community and Industrial Development State Capitol, Room M-146 Charleston, WV 25305 (304) 348-0400	Mr. Cleve Benedict State Capitol Building Charleston, WV 25305 Ph. (304) 348-3550
WISCONSIN Linda Hauri Rt. 2, Box 32 Beloit, WI 53511 Ph. (608) 362-6477	Ms. Anette Phibbs WI Dept. of Agr. P.O. Box 8911 Madison, WI 53708-8911 (608) 267-4369	Dr. Walter Gojmerac University of Wisconsin 237 C. Russell Labs Madison, WI 53706 Ph. (608) 262-1762	Dr. Walter Gojmerac University of Wisconsin 237 C. Russell Labs Madison, WI 53706 Ph. (608) 262-1762	Dept. of Development P.O. Box 7970 123 West Washington Ave. Madison, WI 53707 (608) 266-1018	Mr. Alan T. Tracy P.O.Box 8911 Madison, WI 53708 Ph. (608) 266-7100

ASSN. CONTACT	INSPECTION	EXTENSION	UNIV. CONTACT	GOV. TRADE OFFICE	DEPT. OF AGR.
WYOMING Peggy Miller Box 388E Sue Dubois, WY 82513	Mr. James W. Bigelow WY Dept. of Agr. 2219 Carey Avenue Cheyenne, WY 82002-0100 Ph. (307) 777-6590	Michael Brewer P.O. Box 3354 Univ. Stn. Laramie, WY 82071 Ph. (307) 766-4261	N/A	Department of Commerce International Trade Office Herschler Bldg., Floor West Cheyenne, WY 82002 (307) 777-6412	Mr. Don Rosoton 2219 Carey Avenue Cheyenne, WY 82002 Ph. (307) 777-6569
CANADA **ALBERTA** Gertie Adair 16715-113th Ave. Edmonton, Alberta T5M 2X2	Mr. Kenn Tuckey Provincial Apiculturist R.R. #6. Edmonton, Alberta T5B 4K3 Ph. (403) 422-1789	Mr. Kenn Tuckey Provincial Apiculturist R.R. #6. Edmonton, Alberta T5B 4K3 Ph. (403) 422-1789	Fairview College Box 3000 Fairview, Alberta T0H 1L0 Ph. (403) 835-6600	N/A	N/A
BRITISH COLUMBIA Steve Mitchell 4321 Majestic Dr. Victoria, V8N 3H1 Ph (604) 477-9248	Mr. Paul van Westendorp BC Ministry of Agr. & Fisheries 17720 57th Ave. Surrey, British Colum. V3S 4P9 Ph. (604) 576-2911	Dr. Mark Winston Dept. of Biological Sciences Simon Fraser University Burnaby, B.C. V5A 1S6 Ph. (604) 291-4459	N/A	N/A	N/A
MANITOBA Don Dixon 911 Norquoy Bldg. Winnepeg, R3C 0P8 Ph. (204) 945-3861	Mr. Don Dixon Manitoba Dept. of Agr. 201-545 University Cres Winnipeg, Manitoba, R3T 5S6 Ph. (204) 945-3861	D. R.W. Currie Dept. of Entomology University of Manitoba Winnipeg, Manitoba R3T 2N2 Ph. (204) 474-6022	N/A	N/A	N/A
NEW BRUNSWICK Fred B. Ervine Site 3, Box 13, RR9 Fredericton, E3B 4X9 NB	Heather Clay NB Dept. of Agr. P.O. Box 6000 Frederickton, NB E3B 5H1 Ph. (506) 453-2666	N/A	Dr. R.W. Currie Dept. of Entomology University of Manitoba Winnipeg, Manitoba R3T 2N2 Ph. (204) 474-6022	N/A	N/A
NOVA SCOTIA Earl Blades P.O. Box 550 Truro, B2N 5E3 Ph. (906) 895-1571	Mr. Dick Rogers NS Dept. of Agr. & Marketing Plant Industry Branch Truro, Nova Scotia, B4N 1J5 Ph. (902) 679-6043	Mr. Dick Rogers NS Dept. of Agr. & Marketing Plant Industry Branch Truro, Nova Scotia, B4N 1J5 Ph. (902) 679-6043	N/A	N/A	N/A
ONTARIO Patricia Westlake RR #3 Bayfield, Ont. NOM 1G0 Ph. (519) 565-2622	Mr. Douglas McRory Ont. Ministry of Agr. & Food R.R. #5, Box 1030 Guelph, Ontario, N1H 6N1 Ph. (519) 767-3127	Mr. Douglas McRory Ont. Ministry of Agr. & Food R.R. #5, Box 1030 Guelph, Ontario, N1H 6N1 Ph. (519) 767-3127	Dr. Cynthia Scott-Dupree Dept. Envir. Biology University Guelph, Ontario N1G 2W1 Ph. (519) 824-4120, ext. 3565	N/A	N/A
PRINCE EDWARD ISLAND Paul Dick RR 1 Winsloe, C0A 2H0 PEI Ph. (902) 368-8277	Mr. Chris Prouse Dept. of Agr. P.O. Box 1600 Charlottetown, PEI, C1A 7N3 Ph. (902) 368-5621	Mr. Chris Prouse Dept. of Agr. P.O. Box 1600 Charlottetown, PEI, C1A 7N3 Ph. (902) 368-5621	N/A	N/A	N/A
QUEBEC Roger Doyon 57 Perras, Napierville CO St. Remi, Quebec	Dr. Jules Simard Apiary Insp. Vet. Service 499, Calixa-Lavallee, suite 200 Joliette, Quebec, J6E 7E2 Ph. (514) 753-4246	N/A	N/A	N/A	N/A
SASKATCHEWAN Sandra Slusar Box 306 Nipawin SOE 1EO Ph (306) 862-2404	Mr. John Gruszka Sask. Dept. of Agr. 800 Central Avenue Prince Albert, Sask. S6V 6G1 Ph. (306) 953-2790	John Gruszka Sask. Dept. of Agr. 800 Central Avenue Prince Albert, Sask. S6V 6G1 Ph. (306) 953-2790	N/A	N/A	N/A

National Organizations Dealing with Africanized Honey Bees

Government

- United States Department of Agriculture (USDA)

Animal Plant Health Inspection Service (APHIS)

- Phil Villa-Lobos USDA,
  Off. of Press & Media Rel.
  Room 459-A Admin. Bldg.
  Washington, DC 20250
  Ph. (202) 720-3088

Honey Bee Management

- Tom Willis
  USDA, Agr. Extension Ser.
  Room 3328 South Bldg.
  Wash., DC 20250-0900
  Ph. (202) 720-2047

AHB Research

- Kim Kaplan
  USDA, Agr. Research Ser.
  Bldg. 005, #335, BARC-W
  Beltsville, MD 20705
  Ph. (301) 344-3932

AHB Research at State Colleges & Universities

- John Naegele
  USDA, Co-op. St. Res. Ser.
  Aerospace Bldg., Rm. 328-B
  Washington, DC 20250
  Ph. (202) 401-4952

Federal Extension Service

- Dr. James E. Tew
  NPL, Apiculture
  Extension Service, USDA
  ATI / The Ohio State Univ.
  Wooster, OH 44691
  Ph. (216) 263-3684

Industry

- The Amer. Farm Bureau
  325 Touhy Avenue
  Park Ridge, IL 60068
  (312) 399-5747
- The Amer. Beekeeping Fed.
  See Industry
- American Honey Producers
  See Industry

Information Contacts for Southern Tier States

- Alabama –Gale Norman
  1445 Federal Drive
  Montgomery, AL 36193
  Ph. (205) 261-5872
- Arizona – Larry Stanford
  1688 W. Adams, Room 421
  Phoenix, AZ 87007
  Ph. (602) 542-4373
- California – Gera Curry
  1220 N Street, Room 304
  Sacramento, CA 95814
  Ph. (916) 445-3588
- Florida – Phyllis Habeck
  1911 S.W. 34th Street
  Gainesville, FL 32608
  Ph. (904) 372-3505
- Georgia – Lisa Ray
  Room 300 Capitol Square
  Atlanta, GA 30334
  Ph. (404) 656-3689
- Louisiana – Larry Michaud
  5825 Florida Blvd.
  Baton Rouge, LA 70806
  Ph. (504) 922-1234
- Mississippi – Harry Fulton
  P.O. Box 5027
  Miss State, MS 39762
  Ph. (601) 325-3390
- New Mex. – Lana Dickson
  P.O. Box 30005, Dept. 3189
  Las Cruces, NM 88003
  Ph. (505) 646-2804
- Texas – Dave Mayes
  229 Reed McDonald Bldg.
  College Station, TX 77843
  Ph. (409) 845-2895

INDUSTRY ORGANIZATIONS

•American Bee Breeders Association. Fred Rossman, P.O. Box 905, Moultrie, GA (912) 985-7200

•American Beekeeping Federation. Sec.-Treas., Troy Fore, P.O. Box 1038, Jesup, GA 31545 (912) 427-8447

Ladie's Aux. of ABF. Donna Ruby, Rt. 3, Box 3, Milnor, ND 58060, (701) 427-5263

Amer. Honey Queen. Gena West, c/o Charlotte Randall, 389 S. Central Ave., Umatilla, FL 32784 (904) 669-8607 (phone & fax).

•American Honey Producers Association. Richard Adee, P. O. Box 368, Bruce, SD 57220, (605) 627-5621.

•Apiary Inspectors of America. John O'Brien, NV Dept. of Agr., 350 Capitol Hill Ave., P.O. Box 11100, Reno, NV 89510-1100 (702) 688-1180

CA Bee Breeders. P.O. Box 95, Red Bluff, CA 96080.

•Eastern Apicultural Society of North America, Inc. Sec. Loretta Surprenant, Miner Institute, Chazy, NY 12921, (518) 846-8020.

• Western Apicultural Society of North America. Nancy Stewart, 2400 21st Street, Sacramento, CA 95818 (916) 451-2337

•National Honey Board. Chairman, Bob Smith, 421 21st Ave. #203, Longmont, CO 80501-1421 (303) 776-2337

•Mid-U.S. Honey Producers Marketing Assn. Gary Reynolds, Box 363, Concordia, KS 66901, (913) 243-3619;

•National Honey Packers & Dealers Association. Richard Sullivan, 5 Ravine Dr., P.O. Box 776, Matawan, NJ 07747. Ph. (908) 583-8188.

•Professional Apiculturists Assn. Malcolm T. Sanford, Entomology Extension Dept., Univ. of FL, Gainesville, FL 32611, (904) 392-1801.

•Southern States Beekeepers Federation. Dr. John Ambrose, Dept. of Entomology, Box 7626, Raleigh, NC 27695, (919) 737-3140.

•The Canadian Honey Council. Linda Gane, Box 1566, Nipawin, Sask. S0E 1E0 (306) 862-3844

•Can. Assn. of Prof. Apic. Dr. G. Otis, Dept. of Env. Bio., Univ. of Guelph, Guelph, Ont. N16 2W1, (519) 824-4120

GOVERNMENT AGENCIES

•USDA — Agricultural Research Ser. Nat. Program Staff, R.D. Plowman, Room 225, Bldg. 005, BARC-W, Beltsville, MD 20705. (301) 720-3656.

•Bee Research Laboratory. Dr. Hachiro Shimanuki, Rm. 209A, Bldg. 476, BARC-East, Beltsville, MD 20705. (301) 504-8975.

•Honeybee Breeding & Genetics & Physiology Research Lab. Dr. Thomas Rinderer, Research Leader, 1157 Ben Hur Rd., Baton Rouge, LA 70820. (504) 766-6064.

•Honey Bee Research. Dr. Anita Collins, Research Leader, 2413 East Hwy. 83, Weslaco, TX 78596. (512) 969-4870.

•Bee Biology & Systematics Laboratory. Utah State University, Logan, Utah 84322-5310.

•Carl Hayden Bee Research Center. Dr. Eric H. Erickson, Center Director, 2000 E. Allen Road, Tucson, AZ 85719. (602) 670-6380.

•Honey Market News. Linda Verstrate, USDA-AMS, Fruit & Vegetable Div., 2015 So. 1st St., Rm. 4, Yakima, WA 98903. (509) 575-2492.

•Price Support Program. Jane Phillips, Commodity Analysis Division, Agricultural Stabilization and Conservation Service, USDA, Washington, DC 20250. (202) 720-7602.

•Extension Service (Federal). Dr. Ricardo Gomez, ES USDA PPMS, RM 3347S, South Bldg., Independance Ave., Washington, DC 20250. (202) 720-2471

•Biosystematics Research Centre. Dr. R. J. T. Trottier, Dir., Rm. B149, K. W. Neatby Bldg, Ottawa, Ontario, Can. K1A OC6. (613) 996-1665.

•Agriculture Canada. Dr. D. L. Nelson, Dr. T. P. Liu and Dr. T. I. Szabo, Research Sta., Research Branch, Agr. Canada, Box 29, Beaverlodge, Alta., Can. TOH OCO. (403) 354-2212.

•Economic Research Service. Dr. Fred L. Hoff, Chief, Specialty Agriculture Branch, Commodity Economics Division, 1301 New York Avenue, NW, Room 1240, Washington, DC 20005-4788 (202) 219-0883.

INTERNATIONAL ORGANIZATIONS

•International Bee Research Association. Andrew Matheson, Director, 18 North Road, Cardiff, CF1 3DY, UK. Telephone: (0222) 372409, Fax (0222) 665522, Telex: 262433 G (quote B8390).

•Apimondia. International Federation of Beekeepers' Associations — President, Raymond Borneck, Rue Du Creux, Montbarrey, France, 3y; General Secretary, 101 Corso Vittorio Emanuele Rome, Italy 00186, (6) 65-12286. Periodical: Apiacta (quarterly).

American Mead Association
Susanne Price
830 35th St.
Boulder, CO 80308
(303) 442-9111

American Apitherapy Society
P.O. Box 74
North Hartland, VT 05052
Ph. (802) 295-6383

Regional Associations

ALABAMA

- **ETOWAH CO BEEKEEPERS** — James Walker, 419 Cove Creek Rd., East Gadsden, 35903
- **JEFFERSON CO BEEKEEPERS** — Ms. Robert Musgrove, 3418 Venus Ln., Fultondale, 35068
- **MOBILE CO BEEKEEPERS** — Gloria G. Wier, P.O. Box 854, Saraland, 36571

ALASKA

- **COOK INLET BEEKEEPERS** — Naomi Harris, Box 140173, Anchorage, 99514
- **INTERIOR AK BEEKEEPERS** — Stephen Peterson, 1153 Donna Dr., Fairbanks, 99712
- **KENAI BEEKEEPERS ASSC.** — Edmund Knutsen, P.O. Box 1525, Soldotna, 99669
- **SOUTH CENTRAL AK BEEKEEPERS** — Peggy McKaig, P.O. Box 141976, Anchorage, 99514

ARIZONA

- **SABA**—Charles Spears, Jr. 1902 S. Cloverland, Tucson, 85711

ARKANSAS

- **WESTERN ARKANSAS BEEKEEPERS** — Anson Gregory, 1520 N. 49th St., Fort Smith, 72904

CALIFORNIA

- **ALAMEDA CO BEEKEEPERS ASSN** — Pat Umlauft, P.O. Box 5155, Pittsburg, 94565-0655
- **BEEKEEPERS ASSN, SO CA** — P.O. Box 5021, Hacienda Hts., 91745
- **CALIFORNIA BEE BREEDERS** — Ron Penner, P.O. Box 567, Red Bluff, 96080
- **CA BEEKEEPERS** — Carol Penner, 19980 Pine Creek Rd., Red Bluff, 96080
- **HUMBOLDT BEEKEEPERS ASSN** — Bob Hitte, 44 Wagon Jack Lane, Arcata, 95521
- **LOS ANGELES CO BEEKEEPERS** — Charles Duncan, 2210 Wilshire Blvd., #344, Santa Monica, 90403
- **MT. DIABLO BEEKEEPERS** — Stan Umlauft, P.O. Box 5155, Pittsburg, 94565-0655
- **NEVADA COUNTY BEEKEEPERS** — P.O. Box 1262, Cedar Ridge, 95924
- **SACRAMENTO AREA BEEKEEPERS** — Barbara Dwyer, 600 Harbor Blvd., W. Sacramento, 95691
- **SAN FRANCISCO BEE CLUB** — Nash Khayat, 686 Corbett Ave., San Francisco, 94114
- **SAN FRANCISCO BEEKEEPERS** — Lenore Bravo, 47 Levant St., San Francisco, 94114
- **SAN FRANCISCO HOBBY BEEKEEPERS** — Leonore Bravo, 47 Levant St., San Francisco 9411[illegible]
- **SANTA CLARA VALLEY BEEKEEPERS** — Greg Kendall, 2112 Creeden Way, Mt. View, 94040
- **SONOMA CO BEE CLUB** — Chuck Sharp, 1246 Enos Ave., Sebastopol, 95472
- **VENTURA BEEKEEPERS** — Don Schram, 3612 Nyeland Ave., Oxnard, 93030

COLORADO

- **NORTHERN CO BEEKEEPERS** — W.B. Belden, Jr., 5922 Venus Ave., Fort Collins, 80525

CONNECTICUT

- **EASTERN CT BEEKEEPERS** — Timothy Grilley, P. O. Box 571, E. Lyme, 06333
- **HAMPDEN CO BEEKEEPERS** — Linda Canders, 108 S. Water St., Warehouse Point, 06088
- **WESTERN CT BEEKEEPERS ASSN** — Tom Mulrane, 22 Mt. Laurel Lane, Sandy Hook, 06842

DELAWARE

- **DELAWARE BEEKEEPERS** — Charlotte Reynolds, 14 Panorama Dr., Newark, 19711
- **SUSSEX CO BEEKEEPERS** — Karen Hall, 10th & Arch St., Seaford, 19973

FLORIDA

- **CENTRAL FL BEEKEEPERS**—Luella Bell, 1058 S. Ridgewood Ave., Deland, 32720
- **ESCAROSO BEEKEEPERS ASSN**—Sylvia Bullard, 9801 Lyman Dr., Pensacola, 32534
- **INDIANA RIVER DIST BEEKEEPERS** — Sara Davis, 4111 Oleander Ave., Fort Pierce, 33450
- **LEE CO BEEKEEPERS ASSN** — W H Lohrey, 107 E Lake Dr., Lehigh Acres, 33936
- **N CENTRAL FL BEEKEEPRS**—Tom Cutts, 1741, NW 7th Ave., Gainesville, 32601
- **NE FL BEEKEEPERS** — Catherine Fleming, 3238 Bessent Rd., Jacksonville, 32218
- **ORANGE BLOSSOM BEEKEEPERS** — Martha Black, P.O. Box 317, Trilby, 34271
- **PALM BEACH CO BEEKEEPERS** — Rosa Durando, 10308 Heritage Farms, Lake Worth, 33463
- **POLK CO BEEKEEPRS** — Charles Moore, 149 Winston Ave., Lake Wales, 33853
- **SOUTH FL BEEKEEPERS** — Ken Tabler, 3637B Country Club Blvd., Cape Coral, 33904
- **SUB TROPICAL BEEKEEPERS**—Lorrain Mann, 15750 SW 217 Ave., Miami, 33187
- **TAMPA BAY BEEKEEPER ASSN** — Mary Fay Roberts, 601 S. Taylor Rd., Seffner, 33584
- **TUPELO BEEKEEPERS**—Benita Wiggins, Rt. 5., Box 3908, Tallahassee, 32301

GEORGIA

- **COASTAL EMPIRE BEEKEEPERS**—Jack Ramsey, 8318 Kent Dr., Savannah, 31406
- **METRO ATLANTA BEEKEEPERS** — Virginia A. Stephens, 430 Lindberg Rd., NE #F-5, Atlanta, 30305
- **NORTHWEST GA BEEKEEPERS** — J.B. Lemons, Rt. 2, Box 361, Lafayette, 30728
- **SOUTHEASTERN GA BEEKEEPERS** — Bob Rowell, Rt.1, Box 147, Nahunta, 31553
- **SPALDING CO BEEKEEPERS**—J R New, P.O. Box 1000, Griffin, 30223
- **TARA BEEKEEPING** — Ray James, 5405 Mason Rd., College Park, 30349
- **TALLAPOOSA BASIN BEEKEEPERS** — Clyde Patterson, 303 Price St., Bremen, 30110
- **WALKER CO BEEKEEPERS ASSN**—Ms. Louis Huggins, Rt.1, Rossville, 30741

HAWAII

- **BIG ISLAND BEEKEEPERS** — P.O. Box 116, Hakalau, 96710

IDAHO

- **IDAHO BEEKEEPERS ASSOC** — Golden Millet, 1 Box 8 Bee, Marsing, 83639

ILLINOIS

- **COOK-DUPAGE BEEKEEPERS** — Charles Williams, 22W 424 Techwood Dr., Glen Ellyn, 60137
- **CTL EASTERN IL BEE ASSOC** — Andy Blum, RR. 1, Box 113, Paxton, 60957
- **HEART OF IL BEE ASSOC** — Robert J. Dubois, 423 N. Lawndale, Washington, 61571
- **ILLIANA BEEKEEPERS** — Kathy Wright, P.O. Box 83, Kansas, 61933
- **LAKE COUNTY BEEKEEPERS ASSOC** — Lynne Davis, 42835 N. Crawford Rd., Antioch, 60002
- **LINCOLNLAND BEEKEEPERS** — Melvin Kemmerling, Rt. 12, Springfield, 62707
- **LOWER ILLINOIS VLY BEEKEEPERS** — Joseph Veith, R.R. 1, Mt. Sterling, 62353
- **MISSISSIPPI VALLEY** — Mary Goechner, 340 S. Randolph, Macomb, 61455
- **NORTHERN IL BEEKEEPERS** — Sonia Callas, 5430 E. Hillside Rd., Crystal Lake, 60012
- **ROCK RIVER VALLEY BEEKEEPERS** — Ernest Holtz, 305 N. Horace Ave., Rockford, 61101
- **SANGAMON VALLEY BEEKEEPERS** — Leonard Edgecomb, 3170 S. Franklin St. Rd., Decatur, 62521
- **SO ILLINOIS BEEKEEPERS** — Don Graff, P.O. Box 895, Marion, 62959
- **SPOON RIVER VALLEY BEEKEEPERS** — Lyle Lefler, R.2, Cuba, 61427
- **ST CLAIR BEEKEEPERS ASSN** — Dee Ann Dormeier, 1724 La Salle, Belleville, 62221
- **TRI-COUNTY BEEKEEPERS**—Josephine Christ, 107 S. Pennsylvania Ave., Belleville, 62221
- **WABASH VALLEY BK ASSOC**—Beverly Tanner, RR.2, Box 707, Fairfield, 62837-9164
- **WESTERN IL BEEKEEPERS** — Lane McKinley, R.R. 1, Box 330, Viola, 61486

INDIANA

- **MICHIANNA BEEKEEPERS ASSOC** — Mary Whalen, 53952 CR 17, Bristol, 46507
- **RIVER VALLEY BEEKEEPERS** — David Maikranz, RR2, Box 64, Oakland City, 47660
- **WHITE RIVER VALLEY BEEKEEPERS** — Janet Pfaff, 2734 S. 130 W, Huntingburg, 47542
- **WABASH VALLEY BEEKEEPERS** —Alice Apple, 1224 W. 6th, Jasper, 47546

IOWA

- **EAST IOWA BEEKEEPERS** — Ronald Wehr, RR 2, Box 114, Keota, 52248
- **SE IOWA BEEKEEPERS** — Ronald Wehr, 2270 Juniper Ave., Keota, 52248
- **IOWA HONEY PRODUCERS**—Bob Shepherd, 917 N. Iowa Ave., Washington, 52353

KANSAS

- **CENTRAL KANSAS BEEKEEPERS** — Anita Mead, Rt. 1, Box 90, Belle Plaine, 67013
- **FLINT HILLS BEEKEEPERS** — Ruth Taylor, 526 S. Union, Emporia, 66801
- **NORTHEASTERN KS BEE ASSOC** — Marilyn Fight, 18225 McIntry Rd., Leaven Worth, 66048

KENTUCKY

- **GREENUP CO BEEKEEPER ASSN** — Carl Crabtree, Argillite, 41121
- **NORTHERN KY BEEKEEPER ASSN** — Ray Laver, 13 Shaw Dr., Alexandria, 41001
- **WHITLEY COUNTY BEEKEEPERS** — Eddie Wells, P.O. Box 181, Corbin, 40702-0181

LOUISIANA

- **ARK-LA-TEX BEEKEEPING** — Mary Harrison, P.O. Box 78435, Shreveport, 71137-8435
- **BEEKEEPERS OF SE LA** — Joan Schnadelback, 4783 Friar Tuck Dr., New Orleans, 70128
- **CAPITAL AREA BEEKEEPERS** — Dalton Kurts, 4029 Hyacinth, Baton Rouge, 70808-3732

MARYLAND

- **ALLEGHENY MOUNTAIN BEEKEEPERS** — Michael T. Savage, 139 Winslow St., Cumberland, 21502
- **ANNE ARUNDEL CO BEEKEEPERS** — Jon Clulow, 871 Swift Rd., Pasadena, 21122
- **ASSN OF SOUTHERN MD** — Greg Farris, Rt. 1, Box 460 H, Indian Head, 20640
- **BOWIE-UPPER MARLBORO BEEKEEPERS** — David Morris, 9309 Montpelier Dr., Laurel, 20708
- **CARROLL CO BEEKEEPERS** Stephen McDaniel, 4964 Wentz Rd., Manchester 21102
- **CTL MARYLAND BEEKEEPERS** — Lloyd Snyder, 4747 Norrisvile Rd., White Hall, 21161
- **HAGERSTOWN VALLEY APIAN SOC** — Carol Johnson, 2045 Reed Rd., Knoxville, 21758
- **HOWARD CO BEEKEEPERS** — Irving C. Robinson, 4672 Clydesdale Ct., Ellicott City, 21043
- **MONTGOMERY CO BEEKEEPRS** — George W. Imire, Jr. 12705 Circle Dr., Rockville, 20850
- **SUSQUEHANNA BEEKEEPERS** — David Simmons, 3212 Aldino Rd., Churchville, 21028

MAINE

- **DOWNEAST-ME ST BEEKEEPERS** — James Reed, RFD 1, Box 2625, Bar Harbor, 04609
- **SEACOAST BEEKEEPERS** — John Hadwen, 263 Diamond Hill Rd., Berwick, 03901
- **TRI-COUNTY BEEKEEPERS**—Genevieve Delicata, RR1, Box 417, Stockton Springs, 04981
- **WASH. CO. BK. ASSOC.** — Linda Hurley, Hoytown Rd., E. Machias, 04654

MASSACHUSETTS

- **BARNSTABLE CO BEEKEEPERS**—Jean Kennedy, 575 Willow St., West Barnstable, 02668
- **BRISTOL CO BEEKEEPERS** — Joan Ready, 1651 Elm St., Dighton, 02715
- **ESSEX CO BEEKEEPERS ASSOC** — Ena Griswold, 166 Shute St., Everett, 02149
- **FRANKLIN CO ASSN** — Ralph Whiteman, Martindale Rd., Bernardston, 01337
- **HAMPDEN CO BEEKEEPERS** — G.S. Walker, 303 N. Loomis, Wouthwick, 01077
- **HAMPSHIRE CO BEEKEEPERS** — R. Pelissier, 136 East St., So. Hadley, 01075
- **MA FEDERATION OF BEEKEEPERS** — Vitto Marrata, 28 Hamblin's Way, Marsten Mills, 02648
- **MERRIMACK VALLEY BEEKEEPERS** — Raymond Devanney, 26 Lawrence Rd., Tyngsboro, 01879
- **MIDDLESEX CO BEEKEEPERS** — Theodore W. Shylovsky, 192 Boston Post Rd., Sudbury, 01776-3102
- **NO BERKSHIRE BEE ASSOC** — Laura Zwack, P.O. Box 236, Williamstown, 01267-0236

NORFOLK CO BEEKEEPERS — Ellis Hayden, Jr., 62 Main St., Norfolk, 02056

- **PLYMOUTH CO BEEKEEPERS**—Frederic Magee, 148 Turnpike St., West Bridgewater, 02379

- **WORCHESTER CO BEEKEEPERS** — Jamina Antos, 124 Dudley-So Bridge, Dudley, 01571

MICHIGAN

- **CRANBROOK BEE CLUB** — William Sirr, 1010 Columbia, Berkley, 48072
- **HOLLAND AREA BEEKEEPERS** — John Kleis, 5914 Old Allegan Rd., Hamilton, 49419
- **JACKSON CO BEEKEEPER ASSN** — Kenneth Losey, 6962 Folks Rd., Horton, 49246
- **MACOMB CO BEEKEEPERS ASSN** — Ms. Kurt Ciper, 37477 Union Lake Rd., Rt. 4, Mount Clemens, 48043
- **SAGINAW BAY BEEKEEPERS** — John Kern 12740 E. Curtis, Frankenmuth, 48134
- **SOUTHEASTERN MI BEE ASSOC** — Roger Sutherland, 5488 Warren, Ann Arbor, 48105
- **SOUTHWEST MI BEEKEEPERS** — Susan Lockhart, 49482 49th St., Lawrence, 49064
- **SUPERIOR BEEKEEPERS ASSN** — Robert M. Slee, Box 23, Goetzville, 49736

MINNESOTA

- **CENTRAL MN BEEKEEPERS ASSN** — Rt. 1, Box 45, Ponsford, 56575
- **LAKE REGION BEEKEEPERS,** — Gary Sundberg, R.R. 1, Box 562C, Ottertail, 56571
- **MN BEEKEEPERS ASSN** — Fred Holte, Rt. 1 – 43480 Andee, Harris, 55032
- **MN HOBBY BEEKEEPERS ASSOC** — Janet Anderson, 1514 Laurel Ave., St. Paul, 55104
- **MN HONEY PRODUCERS** — Fred Holte, R1 4348 Andee, Harris, 55032
- **NO CENTRAL BEEKEEPERS ASSN** — P.O. Box 294, Brainerd, 56401

MISSOURI

- **BOONE REGIONAL BEEKEEPERS** — Helen Vroman, RR 1, Box 15B, Armstrong, 65230
- **BUSHWACKERS BEEKEEPERS** — Richard McElroy, Rt. 3, Nevada, 64772
- **DALLAS CO BEEKEEPERS** — Inge Foster, Rt. 1, Box 1160, Urbana, 65767
- **EASTERN MO BEEKEEPER ASSN** — Ken Corbin, 1776 Golden Lake Ct., Chesterfield, 63017
- **JEFFERSON CO BEEKEEPERS** — Marko Biscan, 7255 Hwy. 30, Cedar Hill, 63016
- **MID-MO BEEKEEPERS** — Dave James, Rt.1, Box 14B, Jadwin, 65501
- **MIDWESTERN BEEKEEPER ASSN** — Carol Kjelshus, 7121 Park, Kansas City, 64129
- **MISSOURI VALLEY BEEKEEPERS** — Gorden Davis, 2151 Golfview, Wentzville, 63385
- **OZARK BEEKEEPERS ASSOC** — Mary Jane Kelly, Rt. 6, Box 610-I, Springfield, 65803
- **OZARK MOUNTAIN BEEKEEPERS** — Eddie Rosencrans, Rt. 2, Box 118, Reeds Spring, 65737
- **SEMO HONEY PRODUCERS** — Bob Carter, 407 Leseiur, Portageville, 63873
- **SO CENT BEEKEEPERS** — Marge Kilton, RR 2, Box 2746, Alton, 65606
- **SOUTHWEST MO BEE ASSOC** — Marilyn Spencer, Rt.1, Box 254-A, Rocky Comfort, 64861
- **TWO RIVERS BEEKEEPERS ASSN** — Gerry Lee, 9637 Ridge Ave., Overland, 63114
- **WEBSTER CO BEEKEEPERS ASSN** — Keith Nutting, Rt.1, Box 588, Fair Grove, 65648

MONTANA

- **EASTERN MT BEEKEEPERS** — Gorvan Leduc, 2026 Wilkins Rd., Laurel, 59044

NEBRASKA

- **EASTERN NE HONEY PRODUCERS** — Inara Kesang, 8910 Monroe Court, Plattsmouth, 68048
- **NE HONEY PRODUCERS** — Carol Kuehl, P.O. Box 220, Loup City, 68853
- **NORTHEAST NE BEEKEEPERS** — Jerry Bishop, 311 Wst 28th Ave., Bellevue, 68005-5323

NEVEDA

- **NORTHERN NEVADA APICULTURE SOC** — Bill Goff, 140060 Edmands Dr., Reno, 89511

NEW HAMPSHIRE

- **KEARSARGE BEE ASSOC** — Tom Wiegelmann, RR 1, Box 376, Bradford, 03221-9123
- **MERRIMACK VLY BEEKEEPERS** — Robert Salvage, 3 Birchwood Rd., Windham, 03087
- **PAWTUCKAWAY BEEKEEPERS** — John Lachance, RFD. 13, Box 334F Oak Hill, Loudon, 03301

NEW JERSEY

- **CENTRAL JERSEY BEEKEEPERS** — Liz Rodrigues, 157 Five Point Rd., Colts Neck, 07722
- **ESSEX CO BEEKEEPERS** — Marian E. Chandler, 85 Deerfield Rd., W. Caldwell, 07006
- **MORRIS CO BEEKEEPERS** — Roha Duve, R.D. 1, Box 258-B, Washington, 07862
- **NE BEEKEEPERS ASSOC, NJ** — Alfred E. Cundall, 390 Jackson Ave., Township of Washington, 07675
- **SOUTH JERSEY BEEKEEPERS** — Sheryl Markley, 13 W. Millcreek Rd., East Hampton, 08060
- **SUSSEX CO BEEKEEPERS SOC** — Marilyn Cosh, 175 Sally Harden Rd., Wantago, 07461

NEW YORK

- **CHAMPLAIN VALLEY BEEKEEPERS** — Loreta Surprenant, Box 300A Co Home Rd, Essex, 12936
- **CHAUTAUQUA CO BEEKEEPERS** — Ken Waite, Rt. 3, Box 356, Jamestown, 14701
- **LONG ISLAND BEEKEEPERS** — Richard Blohm, 30 Cherry Lane, Huntington, 11743-2945
- **S ADIRONDACK BEEKEEPERS** — Rick Green, 15 Gretel Terrace, Ballston Lake, 12019-9108
- **SOUTHEASTERN BEEKEEPERS CLUB** — Kathleen Smith, 239 Wisner Ave., Middletown, 10940
- **SOUTHERN TIER BEEKEEPERS** — Carl L. Riechers, 1209 Laurelton Dr., Enidcott, 13760
- **WESTERN NY HONEY PRODUCERS** — Robert Y. Harbison, 2493 Sweet Home Rd., Amherst, 14228

NORTH CAROLINA

- **ALAMANCE CO BEEKEEPERS** — Michael V. West, 4203 McCray Court, Burlington, 27251
- **ALBERMARLE REGIONAL BEE CLUB** — Wink Munden, 506 Hemlock Ave., Elizabeth City, 27909
- **ALLEGHANY CO BEEKEEPERS** — Bryon Woodruff, Rt. 1, Box 139, Glade Valley, 28627
- **BUNCOMBE CO BEEKEEPERS** — Eloise V. Wilson, P.O. Box 159, Fairview, 28730
- **BURKE CO BEEKEEPERS ASSN** — Rev L. N. Puette, Rt. 2, Box 958-A Connelly Springs, 28612
- **CABARRUS CO BEEKEEPERS** — Vernon Hathcock, Rt. 3, Box 139-B, China Grove, 28023
- **CARTERET CO BEEKEEPERS** — Harry Lockey, Jr., Rt. 2, Box 226, Newport, 28570
- **CASWELL CO BEEKEEPER ASSN** — Paul Myers, Rt.1, Box 133, Blanch, 27212
- **CATAWBA VALLEY BEEKEEPERS** — Jim Peeler, Rt. 11, Box 397, Hickory, 28601
- **CHATHAM CO BEEKEEPER ASSN** — Judy Allen Pick, Rt. 1, Box 309, Pittsboro, 27312
- **CHOANOKE BEEKEEPERS ASSOC** — Frank Stevenson, 301 E. Broad St., Murfreesboro, 27855
- **COLUMBUS-BRUNSWICK BEEKEEPERS** — Sylvia Martin, Rt. 2, Box 306, Chadbourn, 28431
- **DAVIE CO BEEKEEPERS ASSN** — Cathy B. Phelps, 450 Windy Hill Dr., Salisbury, 28144
- **DURHAM CO BEE CLUB** — Ellis Selph, 2502 Winton Rd., Durham, 27707
- **EDGECOMBE CO BEEKEEPERS** — Peggy Weatherford, Rt. 2, Box 162, Battleboro, 27809
- **FORSYTH CO BEEKEEPERS ASSN** — Margie Weatherman, 5395 Spainhour Mill Rd., Tobaccoville, 27050
- **GASTON CO BEEKEEPERS ASSN** — Kirby L. Whitworth, 111 Piedmont Rd., Belmont, 28012
- **GREENSBORO BEEKEEPERS** — Henry Moon, 2416 Wright Ave., Greensboro, 27403
- **GUILFORD CO BEEKEEPERS** — Edward Snyder, 5400 Bosher Lake Dr., Mcleansville, 27301-9213
- **HAYWOOD CO BEEKEEPERS** — Cormell Hollingworth, 1322 Allens Creek, Waynesville, 28786
- **HENDERSON CO BEEKEEPERS** — Bitton Allison Jr., Horse Shoe, 28742
- **HOKE CO BEEKEEPERS ASSOC** — Betty Freeman, Rt. 2, Box 527, Raeford, 28376
- **IREDELL CO BEEKEEPERS** — Bob Kale, Rt. 2, Box 63, Catawba, 28609
- **JACKSON CO BEEKEEPERS ASSN** — Robert Anders, P.O. Box 8, Cullowhee, 28723
- **LEE CO BEEKEEPERS ASSOC** — W. Lynn Spivey, 120 E. Weatherspoon St., Sanford, 27330
- **MACKLENBURG CO BEEKEEPERS** — Bradford Miller, 4719 Emory Ave., Charlotte, 28211
- **ONSLOW CO BEEKEEPERS** — Maurice Cook, Rt. 4, Box 167, Jacksonville, 28540
- **ORANGE CO BEEKEEPERS ASSOC** — Jeffrey Lee, Duke University, Durham, NC 27706
- **PAMLICO CO BEEKEEPERS** — Susan Herring, 6789 St. Julian Way, Fayetteville, 28314
- **PITT CO BEEKEEPERS ASSOC** — Scott Flanagan, 501 Grimmersburg St., Farmville, 27828
- **RANDOLPH CO BEEKEEPERS** — George Byrum, Rt. 2, Box 151, Asheboro, 27203
- **ROBESON CO BEEKEEPER ASSN** — D. S. Gillispie, 1905 Rowland Ave., Lumberton, 28358
- **ROWAN CO BEEKEEPERS ASSN** — James Ijames, 211 W McCubbins St., Salisbury, 28144
- **RUTHERFORD CO BEEKEEPERS** — Arthur Stchley, Rt. 3, Rutherfordton, 28139
- **SAMPSON CO BEEKEEPERS** — Florence Beretich, Rt. 3, Box 14, Clinton, 28328
- **SURRY CO BEEKEEPERS ASSN** — Z. Wayne Thompson, Rt. 1, Box 179, Elkin, 28621
- **SWAIN CO BEEKEEPING CPTR** — M. G. Sanderson, Rt. 2, Box 608, Bryson City, 28713
- **TRANSYLVANIA CO BEEKEEPERS** — James Bales, Star Rt. Box 580, Rosman, 28772
- **TRI-CO BEEKEEPERS ASSOC** — Allen Caldwell, 115 Peachtree St. #103, Murphy, 28906
- **WAKE CO BEEKEEPERS ASSOC** — Stanley Hodge, 1314 Dowling Rd., Raleigh, 27610
- **WATAUGA CO BEEKEEPERS** — Alicia Breton, P.O. Box 13, Todd, 28684
- **WAYNE CO BEEKEEPERS ASSOC** — Louise Sasser, 108 E. Westwood Dr., Goldsboro, 27530
- **WILSON CO BEEKEEPERS ASSN** — Harvey Denton, Rt. 2, Box 50-B, Bailey, 27087

OHIO

- **ASHTABULA BEEKEEPERS** — Bill Loudon, 86 Stockwell St., Painesville, 44077
- **BUTLER CO BEEKEEPERS** — Bob Raven, 6651 Imhoff Rd., Oxford, 45056
- **CARROLL CO BEEKEEPERS** — Jack Leggett, 7190 Roswell Rd., Sherrodsville, 44675
- **CENTRAL OH BEEKEEPERS** — David Casdorph, 4111 Maize Rd., Columbus, 43224
- **CLARK CO BEEKEEPERS** — Rolland Anderson, 1312 N Lowry Ave, Springfield, 45504
- **COLUMBIANA & MAHONING CO BEEKEEPERS** — Beverly Converse, 4950 Lower Elkton Rd., Leetonia, 44431
- **COLUMBIANA CO BEEKEEPERS** — Grace Hamilton, Rt. 1, Lisbon, 44432
- **CUYAHOGA COUNTY BEE ASSN** — Amy L. Leas, 4012 Miner Dr., Brunswick, 44212
- **GEAUGA BEEKEEPERS ASSN** — Mary Cluts, 9799 Pekin Rd., Novelty, 44072
- **GREENE CO BEEKEEPERS** — O. K. Simison, Rt. 1, Spring Valley, 45370
- **GUERNSEY CO BEEKEEPERS** — Roger Seaton, 9488 Liberty Rd., Cambridge, 43725
- **HIGHLAND CO BEEKEEPERS** — Jess Prye, 7926 Wright Rd., Hillsboro, 45133
- **HOCKING CO BEEKEEPERS** — Annette McClain, 20193 St. Rt. 328, New Plymouth, 45654
- **JEFFERSON CO BEEKEEPERS** — Kathryn Grafton, Rt. 2, Box 341, Bloomingdale, 43910
- **KOKOSING VALLEY BEEKEEPERS** — Kenneth Neighbarger, 305 Sychar Rd., Mt. Vernon, 43050
- **KNOX CO BEEKEEPERS ASSN** — Harold Bower, 14258 Beckley Rd., Mt. Vernon, 43050
- **LAKE CO BEEKEEPERS ASSN** — Mark Rinderman, 116 Hawthorne Dr., Painesville, 44077
- **LAWRENCE CO BEEKEEPERS** — Margaret Reid, 15754 Ct. Rt. 775, Willow Wood, 45696
- **LORAIN CO BEEKEEPERS ASSN** — Harry Painter, 7074 Case Rd., North Ridgeville, 44039-2734
- **MARION CO BEEKEEPERS ASSN** — Henry Perry, 440 Avondale Ave., Marion 43302
- **MEDINA CO BEEKEEPERS** — 887-0475
- **MIAMI CO BEEKEEPERS** — Robert Newmann, 183 S. Dorsett Rd., Troy, 45373
- **MORROW CO AREA BEEKEEPERS** — Arthur Korody, 4084 Co. Rd. 115, Mt. Gilead, 43338
- **MUSKINGUM CO BEEKEEPERS** — Dennis Moffitt, 185 Homestead Dr., New Concord, 43762
- **NW OHIO BEEKEEPERS ASSN** — Zelma Cox, 1623 W. Wayne, Lima 45805

- **PORTAGE CO BEEKEEPERS** — Peggy Kaminski, 1459 E. Howe Rd., Kent, 44240
- **RICHLAND CO BEEKEEPERS** — Ralph Mitchell, Brokaw Rd., Rt. 2, Butler, 44822
- **ROSS CO BEEKEEPERS ASSN** — Fred Weaver, 27 Courtland Dr., Chillicothe, 45601
- **SOUTH CENTRAL BK ASSN** — Fred Ginther, 122 Huntington Lane, Chillicothe, 45601
- **SOUTHWESTERN OH BEE ASSN** — Karen Berry, 5186 Batavia Rd., Cincinnati, 45244
- **STARK CO BEEKEEPERS** — Mrs. Fran Muller, 1927 6th St. SW, Canton 44706
- **SUMMIT CO BEEKEEPERS** — Cheryl Beyer, 6423 Olde Eight Rd., Peninsula, 44264
- **TRI-COUNTY BEEKEEPERS ASSN** — B.J. Hoffman, 3198 Crater Rd., Wooster, 44691
- **TRUMBULL CO BEEKEEPERS** — Sheila Terrill, 10044 Ridge Rd., Kinsman, 44428
- **WARREN CO BEEKEEPERS** — Oscar Brown, 7154 Hopkins Rd., Maineville, 45039

OKLAHOMA

- **CENTRAL BEEKEEPERS ASSN** — Glenn Gibson, Box 368, Minco, 37059
- **DEEP FORK VALLEY BEEKEEPERS ASSN** — J.H. Allison, Rt. 1, Box 386 B, Henrietta, 74437
- **EAST CENTRAL BEEKEEPERS ASSN** — Carl Morse, Rt. 1, Box 28, Atwood, 74827
- **FOUR STATE BEEKEEPERS ASSN** — J.D. Merit, 228 I St. SE, Miami, 74354
- **FRONTIER COUNTRY BEEKEEPERS ASSN** — Chuddie Smith, 1004 E. Noble, Guthrie, 73044
- **GREEN COUNTRY BEEKEEPERS** — Shirley Wright, Rt. 1, Box 55A7, Locust Grove, 74352
- **INDIAN NATIONS BEEKEEPERS** — Doug Berno, 527 Anthony, Muskogee, 74403
- **NORTH CENTRAL BEEKEEPERS** — Joe Green, Box 1983, Stillwater, 74076
- **NE OKLAHOMA BEEKEEPERS** — J.D. Harper, 326 W. 62nd St. N, Tulsa 74126-1468
- **NW BEEKEEPERS ASSN** — Leonard Morris, 905 E. State, Fairview, 73737
- **SE OKLAHOMA BEEKEEPERS** — Dorothy Bragg, Rt. 1, Box 305, Caddo, 74729
- **SW OK BEEKEEPERS ASSN** — Eva Bell Ritter, HC 64, Box 57, Marlow, 73055

OREGON

- **CENTRAL OREGON** — Bob Morgan, 3800 Benson Road, The Dalles, 97058
- **EASTERN OREGON** — Dave Lefore, Rt. 3, Box 207E, Milton Freewater, 97862
- **LANE CO BEEKEEPERS** — James Sheridan, 1885 Norkenzie Rd., Eugene, 97401
- **METRO** — Chuck Sowers, 4390 Lords Lane, Lake Oswego, 97304
- **NORTH COAST** — Bob Allen, P.O. Box 434, Garibaldi, 97118
- **SOUTH COAST** — Bruce Yeager, 6833 Joe Ney-Davis, Coos Bay, 97420
- **SOUTHERN OREGON** — George Steffensen, 1634 Fish Hatchery Road, Grants Pass, 97527
- **WILLAMETTE VALLEY** — Don Ames, 25222 Arnold Lane, Elmira, 97437

PENNSLYVANIA

- **2 C'S & A BEE ASSOC** — Joe Bayer, RD. 3, Box 311A, Tyrone, 16686
- **ARMSTRONG-INDIANA BEEKEEPERS** — Charlie Lyon, 207 Fairground Rd., Ford City, 16226
- **CENTRAL WSTRN PA BEE ASSN** — Nancy Paffenroth, Unionville Rd., Evans City, 16033
- **CHESTER CO BEEKEEPER ASSN** — Tim Sterrett, Box 1799, Westtown, 19395-1799
- **CLARION CO BEEKEEPER ASSN** — R. W. McHenry, Front St., Box 176, Sligo, 16255
- **DAUPHIN CO BEEKEEPERS ASSN** — Linda Kerstetter, 8068 Fox Mill Rd., Harrisburg, 17112
- **FRANKLIN CO BEEKEEPERS** — Lloyd Benedict, 2183 Anthony Hwy., Chambersburg, 17201
- **LACKAWANNA CO BEEKEEPERS** — Esther Ziegler, Rt. 1, Dalton, 18414
- **LANCASTER CO HONEY PRODUCERS** — Loren Sandler, 1235 Red Run Rd., Stevens, 17578
- **LEHIGH VALLEY BEEKEEPERS** — Richard Olson, RD 1, Box 296M, Germansville, 18053
- **LUZERNE CO BEEKEEPERS** — Ernest Young, 347 E. Noble St., Naticoke, 18634
- **LYCOMING CO BEE ASSOC** — Norman L. Atkins, 203 Grand St., Williamsport, 17701
- **MONTGOMERY CO BEEKEEPERS** — Joseph Duffy, 309 Cliveden Ave., Glenside, 19038
- **NORTHWESTERN PA BEEKEEPERS** — Jeff Allio, RD 3, Nickleplate Rd., Cochranton, 16314
- **POTTER CO BEEKEEPERS ASSN** — Lloyd Tyler, Rt. 3, Coudersport, 16915
- **SCHUYKILL CO BEEKEEPERS** — Rick Freeman, RD. 2, Box 24A, Auburn, 17922
- **VENANGO CO BEEKEEPERS** — Ms. Ernest Montogomery, RD. 5, Box 14, Franklin, 16323
- **WAYNE CO BEEKEEPERS ASSN** — Evelyn Merring, RD 6, Box 6601, Lake Ariel, 18436
- **YORK CO BEEKEEPERS** — Judy Brenneman, Rt. 1, Box 1377, Spring Grove, 17362

RHODE ISLAND

- **BRISTOL CO BEEKEEPERS ASSN** — Bruce Holden, 11 Field Lane, Barrington, 02806
- **KENT COUNTY BEEKEEPERS ASSN** — Bernard Bieder, P.O. Box 8880, Warwick, 02888
- **NEWPORT CO BEEKEEPERS ASSN** — Steven Amble, 136 Cedar Ave., Portsmouth, 02871
- **PROVIDENCE CO BEEKEEPERS ASSN** — Salvatore Bucacci, 23 Gillen St., Providence, 02904
- **WASHINGTON CO BEEKEEPERS ASSN** — Ed Cook, RR 2 Box 223, 100 Acre Pond, W. Kingston, 02892

SOUTH CAROLINA

- **MID-STATE BEEKEEPING ASSN** — Clifford E. Ward, 910 Pond Dr., West Columbia, 29169
- **YORK CO BEEKEEPERS ASSN** — Ms. I.T. Hepp, Leslie Highway, Rock Hill, 29732

TENNESSEE

- **ANDERSON CO BEEKEEPERS** — Sara Martin, Rt. 6, Box 189-A, Clinton, 37716
- **BLOUNT CO BEEKEEPERS** — John Gee, 173 Hamil Rd., Friendsville, 37737
- **CHATTANOOGA AREA BEEKEEPERS** — Joe Kilpatrick, 834 Runyan Dr., Chattanooga, 37405
- **CHEROKEE BEEKEEPERS ASSN** — Ms. David Robinson, Rt. 4 Box 353, Decatur, 37322
- **COLUMBIA BEEKEEPERS** — Lona Vaughn, Rt. 7, Box 123, Columbia, 38401
- **DICKSON CO AREA BEEKEEPERS** — Elaine Smith, Rt. 1, Box 74C, Cumberland Furnace, 37051
- **DUCK RIVER BEEKEEPERS ASSN** — Elaine Holcombe, P.O. Box 303, Shelbyville, 37160
- **FRANKLIN CO BEEKEEPERS** — James Duncun, Rt. 2, Winchester, 37398
- **JACKSON CO BEE ASSN** — R. C. Smith, Gainesboro, 38562
- **LAWRENCE CO ASSOC** — Ralph Ring, Lawrenceburg, 38464
- **LOUDON CO BEEKEEPERS** — Jim Goodman, 8633 Hwy. 11, Lenoir City, 37771
- **MCMINN CO BEEKEEPERS ASSN** — R. D. Malone, Lake View Farm, Niota, 37826
- **MEMPHIS AREA BEEKEEPERS** — Dean Bush, 1948 Prado Ave., Memphis, 38116
- **MONROE CO BEEKEEPERS ASSN** — E. E. Hagler, Madisonville, 37354
- **NASHVILLE AREA BEEKEEPERS** — Allan Davis, 137 Spring Valley Rd., Nashville, 37214-2833
- **OVERTON CO BEE ASSN** — Ronald Johnson, 317 University St., Livingston, 38570
- **SEVIER CO BEEKEEPERS ASSN** — John R. Kelley, 613 Sandy Point Lane, Sevierville, 37862
- **STONES RIVER BEEKEEPERS** — George Cooksey, 2407 Braxton Bragg Dr., Murfreesboro, 37130
- **SUMNER CO BEE ASSOC** — Houston Curtis, 344 Corinth Rd., Portland, 37148
- **TIPTON CO BEE ASSN** — Ira Sellers, Covington, 38019
- **WASHINGTON CO BEEKEEPERS** — K. Saylor, Rt. 2, Box 94, Jonesboro, 37659
- **WEAKLEY CO BEE ASSN** — A. M. Walker, Dresden, 38225
- **WILSON CO BEEKEEPERS ASSN** — Glenda Reed, 155 Jackson Hts. Rd., Goodlettsville, 37072

TEXAS

- **AA HONEY BEE STEWARDS** — Mack Ray, 10608 Macmora Rd., Austin, 78758
- **ALAMO AREA BEEKEEPERS ASSN** — Jane Crenwelge, 322 Craigmony Lake, San Antonio, 78213
- **ANDERSON CO BEEKEEPERS** — Tony Gunnels, 208 Fifth St., Palestine, 75801
- **ANGELINA ASSN** — George A. Berry, Rt. 9, Box 5160, Lufkin, 75901
- **BRAZOS VALLEY ASS'N** — Gordon A. Brynildsen, 3011 Durango, College Station, 77840
- **CAPITOL AREA BEEKEEPERS** — A. J. Adaire, 1507 Summit St., Austin, 78741
- **COLLIN CO HOBBY BEEKEEPERS** — Ted Vance, 2213 S Hwy 5, McKinney, 75069
- **CONCHO VALLEY ASSN** — Diana Ensle, P.O. Box 60541, San Angelo, 76906
- **EAST TEXAS ASSOCIATION** — Richard & Brenda Counts, 16239 Audrey Lane, Arp, 75750
- **EL PASO ASSN** — Steven Cameron, 1505 Mescalero Dr., El Paso, 79925
- **ERATH CO BEE ASSOC** — Karena Eccles, Rt. 1, Box 159, Glen Rose, 76043
- **FORT BEND ASSN** — Gene Debons, 2435 Wren Meadow, Richmond, 77469
- **GALVESTON CO ASSN** — Margie Coplin, 3512 Jack Beaver Rd., Santa Fe, 77517
- **GOLDEN TRIANGLE ASSN** — R. C. Lawson, 1855 Fox Rd., Vidor, 77662
- **HARRIS CO ASSN** — Herb Barrier, Rt. 3A, Box 3385, Pearland, 77581
- **HEART OF TX BEEKEEPERS** — Ann G. Hill, 303 W. Chantilly, Waco, 76706
- **HILL CO. BEEKEEPERS ASSN** — August A. Lutz, Sr., 916 Monroe, Kerrville, 78028
- **HOUSTON BEEKEEPERS ASSN** — Herschel D. Womac, 11215 Tyne Court, Houston, 77024
- **MONTGOMERY CO BEEKEEPERS** — Milton Howard, 1 Joann, Willis, 77378-8486
- **NORTH CTRL TX BEEKEEPERS** — Virgil I. Woodfin, 200 S. Park, Iowa Park, 76367
- **PERMIAN BASIN ASSN** — Dean Brittingham, 2312 North Adams, Odessa, 79761
- **PROG BK ASSN OF S TX** — Jack Padget, P.O. Box 1041, Orange Grove, 78372
- **RED RIVER VALLEY ASSN** — Larry Graverholz, P. O. 2501, Wichita Falls, 76307
- **RIO GRANDE VALLEY ASSN** — Henry Graham, Rt. 1, Box 99, Donna, 78537
- **SOUTH PLAINS BEEKEEPERS** — James Colson, P.O. Box 2247, Lubbock, 79408
- **TEXAS HONEY CO-OP** — P.O. Box 14292, San Antonio, 78214
- **TEXOMA ASSOC.** – Russell Green, P.O. Box 164, Ector, 75439
- **TRINITY VALLEY ASSN** — Mr. & Mrs. Hutchinson, 1802 St. Francis Ave., Dallas, 75228
- **TRI-CO AREA BEEKEEPERS** — Dean Futch, 904 Chalk St., Copperas Cove, 76522
- **VICTORIA CO BEEKEEPERS** — Rex Binnetson, 1208 S. Laurent, Victoria 77901
- **WALKER CO BEEKEEPERS** — Steve Laube, 3008 Powell Rd., Huntsville, 77340
- **WILLIAMSON CO ASSN** — Dean Futch, 904 Chalk St., Copperas Cove, 76522

UTAH

- **WASATAH BEEKEEPERS ASSN** — Gerri Withers, 8349 S. 100 E., Sandy, 84070

VIRGINIA

- **BLUE RIDGE BEEKEEPERS ASSN** — Ms. Punky Ward, 3314 Bandy Rd., Roanoke, 24014
- **CENTRAL VA BEEKEEPERS EAST** — Sylvia Newland, 9002 Gayton Rd., Richmond, 23229
- **CENTRAL VA BEEKEEPERS WEST** — James Dubovsky, 3720 Country Ln., Charlottesville, 22903
- **GLOUCESTER BEEKEEPERS ASSN** — Ms. Carmen Stanford, Rt. 4, Box 2825, Hwy. 17, Glocester, 23061
- **HALIFAX BEEKEEPERS ASSN** — E. Donald Chandler, P.O. 265, Virgilina, 24598
- **LOUDOUN BEEKEEPERS ASSN** — Richard Hays, Sr., P.O. Box 1030, Purcellville, 22132
- **MARYLAND BEEKEEPERS** — David Bernard, 289 Sedgemoor Square, Sterling, 22170-3257
- **MT. EMPIRE BK ASSOC** — Edwin Wilson, 190 Dogwood Drive, Wytheville, 24382
- **NASA-LANGLEY APIC CLUB** — Maywood Wilson, 403 Calthrop Neck Rd., Yorktown, 23693
- **NORTHERN PIEDMONT BEEKEEPERS** — Barbara Dennis, Rt. 1, Box 570, Amissville, 22002
- **NORTHERN VA BEEKEEPERS** — Pearl Liles, 2451 S. Culpeper St., Arlington, 22206
- **PIEDMONT BEEKEEPERS ASSN** — Mrs. A.A. Blanks, Rt. 1, Box 14, Long Island, 24569
- **POWHATAN BEEKEEPER ASSN** — Faye Clarke, 2802 Hill Top Lane, Powhatan, 23139
- **PRINCE WILLIAM BEEKEEPERS** — Paul Ijams, P.O. Box 1952, Manassa, 22110
- **RICHMOND BEEKEEPERS ASSN** — Susan Kirkpatrick, 8297 Spring Hollow Drive, Richmond, 23227
- **SHENANDOAH VLY BEEKEEPERS** — A. Doge Rader, Rt. 1, Box 591, Stuarts Draft, 24477
- **SOUTHWEST PIEDMONT BEEKEEPERS** — Harry Litte, P.O. Box 7, Collinsville, 24078
- **TIDEWATER APIC FOUNDATION** — Craig Corley, 2925 Pinewood Drive, Virginia Beach, 23452

- **TIDEWATER [illegible]KEEPERS ASSN** — Elaine Utterback, 1424 Gannon Rd., Chesapeake, 23703
- **VA COMMERCIAL BEEKEEPERS ASSN** — C.L. Burgess, 1900 Memorial Ave., Lynchburg, 24501

VERMONT

- **BENNINGTON CO BEEKEEPERS** — J. Ash, P.O. Box 723, Bennington, 05201
- **EASTERN APICULTURAL SOCIETY** — Maxine Manchester, P. O. 647, Middlebury, 05753
- **VERMONT HONEY PROMOTION** — Cindi McTaggert, RR 1, Box 2330, Manchester Center, 05255

WASHINGTON

- **CENTRAL VALLEY BEEKEEPERS ASSN** — Claudia Richardson, 9409 Coolidge, Yakima, 98908
- **CLARK CO BEEKEEPERS ASSN** — Pamela Crone Wenzloff, 16810 NE 40th Ave., Vancouver, 98686
- **COLUMBIA BASIN BEEKEEPERS** — Meril Peterson, 1305 W. 42 Ave., Kennewick, 99336
- **COWLITZ CO BEEKEEPERS ASSN** — Eva Davis, 3956 Columbia Hts Rd., Longview, 98632
- **INLAND EMPIRE BEEKEEPERS** — Ms. Rae Bateman, 12028 E. Boone, Spokane, 99206
- **MT BAKER BEEKEEPERS ASSN** — Anthony Duralia, 1451 Country Lane, Bellingham, 98225
- **NORTHWEST DIST BEEKEEPERS** — Peg Dougherty, 9312 222nd St. SE, Woodinville, 98072
- **OLYMPIA BEEKEEPERS ASSN** — Cheryl Randall, 2511 26th Ave. NE, Olympia, 98506
- **PALOUS HILLS BEEKEEPERS** — Ed Friis, W 125 Main St., Pullman, 99163
- **PIERCE CO BEEKEEPERS** — Dianne Knowles, 13204 McCutcheon Rd., E. Orting, 98360
- **PUGET SOUND BEE ASSN** — Merrill Kuehn, 17333 Fourth, SW, Seattle, 98166
- **SKAGIT VALLEY BEEKEEPERS** — Mike Lundbert, 2757 E. Section, Mt. Vernon, 98273
- **VASHON ISLAND BEEKEEPERS** — Miriam Bishop, 9200 SW Bank Rd., Vashon Island, 98070
- **WHIDBEY ISLAND BEEKEEPERS** — Karen Datin, 5159 500th Ave. West, Oak Harbor, 98277

WISCONSIN

- **BROWN CO BEEKEEPERS** — Thomas Cashman, 1415 E. Mason St., Green Bay, 54301
- **CHIPPEWA & EAU CLAIRE BEEKEEPERS** — Fern Eggen, 4733 Stardusk Dr., Rt. 7, Chippewa Falls, 54729
- **DODGE CO BEEKEEPERS** — Peter Graetz, W 1997 Lincoln Rd., Oconomowoc, 53066
- **JEFFERSON CO BEEKEEPERS** — Franklin Borth, N. 1605, Watertown, 53094
- **MANITOWOC CO BEEKEEPERS** — Henrietta Mack, 6529 N County Rd. W, Reedsville, 54230
- **MARATHON CO BEEKEEPERS** — Dean Kaatz, 500 Forest St., Wausau, 54401-5568
- **POLK-BURNETT BEEKEEPERS** — Phillip Larson, RR 2, Clayton, 54004
- **ROCK CO BEEKEEPERS** — Larry Patnoe, Rt. 1, Box T-22, Beloit, 53511
- **RUSK CO BEEKEEPERS** — Elenor Albrecht, Rt. 1 Box 214, Glen Flora, 54526
- **SAUK-COLUMBIA COS BEEKEEPERS** — Daniel Licht, S 6566 Hwy PF, North Freedom, 53951
- **SHEBOYGAN CO BEEKEEPERS** — Mrs. Elaine Schuman, 126 Grafton Ct., Kohler, WI 53044
- **STATELINE BEEKEEPERS ASSN** — Dan Stoudt, 3512 Hwy. 78, Gratiot, 53541
- **ST CROIX CO BEEKEEPERS** — Bob Olson, 1237 Willow Ave., New Richmond, 54017
- **TAYLOR-CLARK BEEKEEPERS** — Florette Kohn, N2580 CTE, Medford, 54451
- **WAPUACA CO BEEKEEPERS** — Stan Jakubek, P.O. Box 54, Iola, 54945
- **WISCONSIN HONEY PRODUCERS** — Rex Bowen, 6614 W. Moltke Ave., Milwaukee, 53210

WEST VIRGINIA

- **BENWOOD BEEKEEPERS** — Jim Pittman, 519 Boggs Rd., Benwood, 26031
- **CABELL-WAYNE BEEKEEPERS** — Gabe Blatt, 3554 Haney's Branch Rd., Huntington, 25704
- **EASTERN PANHANDLE BEEKEEPER ASSN** — Bea Atkins, Rt. 3, Box 30-A, Martinsburg, 25401
- **HAMPSHIRE CO BEEKEEPERS** — Mark Bell, Rt. 1, Box 149, Purgitsville, 26852
- **MARION BO BEEKEEPERS ASSN** — Tom Kees, Rt. 5, Box 93A, Fairmont, 26554
- **MID OHIO VALLEY BEEKEEPERS** — Clifford Leeson, 353A River Hill Rd., Washington, 26181
- **MORGANTOWN AREA BEEKEEPERS** — Charlie Metz, P.O. Box 58, Wadestown, 26589
- **TRI STATE BEEKEEPERS ASSN** — Don Snider, 52 Garvins Lane, Wheeling, 26003
- **WHEELING BEEKEEPERS** — Don Snider, 52 Garvins Lane, Wheeling, 26003

CANADA

- **ALBERTA BEEKEEPERS ASSOC** — Gertie Adair, 16715-113th Ave., Edmonton, Alberta T5M 2X2
- **ASSOC DES AGRICULTEURA-PQ** — Robert Villeneuve, 58 Est Colombiere, Quebe G1L 1R1, Que.
- **ASSOC DES APIC[illegible]F PQ** — Roger Doyon, 57 Perras, Na[illegible]ville CO, St Remi, Que
- **BRANT DIST BEEKEEPERS ASSN** — Kenneth Crabbe, Rt. 3, Scotland, Ont
- **CARLETON CO BEEKEEPERS** — John Baird, Rt. 1, Woodstock, NB
- **CENTRAL OKANAGAN BEE ASSN** — H. C. Macneill, Peachland, BC
- **CRESTON BEEKEEPERS** — Sig Askevold, P.O. Box 877, Creston BC
- **KALOWNA BEEKEEPERS** — Douglas Clower, 2203 Woodlawn St., Kalowna, V1Y 2T1BC
- **NELSON BEEKEEPERS** — Dave Johnson, RR 3, Nelsonville, V1L 5P6, BC
- **OTTAWA VALLEY DIST BEEKEEPERS** — George Benson, 156 Pleasant Park, Ottawa, Ont
- **P E ISLAND BEE CO-OP ASSN** — Geoffrey Paynter, P.O. Box 1114, Charlottetown C1A 7M8, Prince Edward Island
- **PERTH DIST BEEKEEPERS ASSN** — Lorne Klopp, Zurich, Ont
- **PRINCE GEORGE BEEKEEPERS** — I. L. McGill, Rt. 7, Sunny Acres, Prince George, BC
- **QUINTE BEEKEEPERS ASSN** — N E Orr, General Delivery, Wooler K0K 3MO, Ont
- **SASK BEEKEEPERS ASSN** — Tony Lalonde, Box 42, Clavet, Sask., S0K 0Y0
- **SURREY BEEKEEPERS ASSN** — James Medill, 14708 68th Ave., Surrey, BC V3S 2B1

If your association is not listed in this directory, or there is an error in the information, please send additions or corrections to:

Directory,
Bee Culture
P.O. Box 706
Medina, OH 44256.

USING THIS DIRECTORY

Starting with the first page we have listed at the State Level . . .

A ***Contact Person*** for the State Association
The State ***Inspector***
The State ***Extension*** Agent
The ***State Trade Office*** for Export Marketing
The Office of the State ***Department of Agriculture***

Next, there is a page with Federal contacts (both U.S. & Canadian) for a variety of groups, a listing of the major Industry Organizations and their respective contacts, the USDA Research Labs and the International groups.

Finally, there are the contacts for ***Local Associations***, those at the Regional, County or even City level.

THE BRAMBLES

b.a. stringer

Though picking the fruits may be a prickly proposition for us, bees are not hindered in their scramble for bramble nectar. Oregon is blessed with a climate conducive to growing a wide variety of bramble fruits, and ranks first among all the states in the production of blackberries, boysenberries, youngberries, loganberries and red and black raspberries. Wild blackberries of at least three kinds abound along roadways, rail lines, and fencerows around old homesteads. Cultivated brambles include raspberries both black (blackcaps) and red, marionberries, loganberries, boysenberries, blackberries and youngberries.

All of these brambles belong to the genus *Rubus*, the Latin word encompassing blackberries, raspberries and other brambles. In these plants, nectar secretion often begins before the flower opens, and bees can be seen foraging between the petals of closed blossoms for hidden nectar.

The first bramble blooms of the season in Oregon appear on the wild creeping blackberry, also called dewberry or Pacific blackberry, which is the only variety native to Oregon. This plant, *Rubus ursinus* (the name derived from Latin ursus "bear" referring to the Great Bear constellation in the Northern sky), flowers in late April and May and produces nectar with a sugar content of 40-60%. Lu Alexander, a well respected, longtime beekeeper from near Portland, says that when the creeping blackberry blooms, it's time to raise queens. Before then, the weather is generally too unsettled to get good matings.

Bramble flowers (above) are as attractive to bees as the fruit and honey are to beekeepers. These are Blackberry plants (USDA photos).

There are two other wild blackberry varieties in the Pacific northwest; the evergreen *Rubus laciniatus* ("cut in fringe-like segments" referring to the leaves) and the Himalayan blackberry, *R. procerus* ("tall"), both of which have escaped from cultivation and become naturalized. Evergreen and Himalayan blackberries are grown commercially for fresh fruit, jams, pie fillings and syrups, and for regionally produced wines. Colonies are rented for pollination of the cultivated berries, while the acreage of their wild counterparts is a source of surplus honey in western Oregon.

The evergreen blackberry blooms in May through June, its white or pale pink flowers producing nectar that is 36% sugars. The Himalayan blackberry bloom begins late in May and continues into July, with white flowers containing 27% sugar in the nectar. Both varieties also produce abundant grey pollen.

Red raspberries are grown commercially in the northern Willamette Valley counties where beekeepers compete for sets in the crops. Blooming from mid May to early June, the flowers are a source of pollen and a delectable and aromatic light-colored honey which sells for a premium price. Pollination fees range from $8.00 to $20.00 per colony (1990 prices), with an average of one to two colonies per acre. The fruit sells for about $1.30/lb. at roadside stands, or 85¢/lb. at "U-Pick" outlets.

There are several species of raspberry in cultivation, including the red raspberry of Europe (*Rubus idaeus*), and the two wild raspberries of North

Continued on Next Page

THE BRAMBLES ... Cont. From Pg. 211

America (*R. strigosus*, red, and *R. occidentalis*, black). The black wild raspberry is also known as "blackcap" In addition there are purple raspberries, hybrids between the two North American species, which are variably thorny depending on their heritage. Raspberries differ from blackberries in that the mass of fleshy drupes constituting the fruit are easily separated from the receptacle (the cone-shaped core of the fruit). The name raspberry is derived from *raptsberry*, coming from a Middle English word for a kind of wine.

Loganberries, youngberries and boysenberries bloom in April and May. The loganberry results from a cross between the 'Antwerp' red raspberry and 'aughinbaugh' blackberry. It was named after Judge J. H. Logan of California, who developed it in 1881. Youngberries were named after B.M. Young, an American horticulturist. Their heritage is somewhat unclear, but they apparently were bred from crosses between blackberries (or possibly loganberries) and dewberries (trailing blackberries). The boysenberry was developed by Rudolph Boysen, another American horticulturist. He crossed varieties of raspberries, blackberries and loganberries to produce the very large and succulent boysenberry. Some modern cultivars of these berries are thornless.

Beekeepers with access to acreage of these fruits watch the skies and cross their fingers for good weather to make a honey crop during the bloom. According to Oregon County and State Agricultural Estimates, the 1990 production value of black and red raspberries, cultivated blackberries and blackberries was $19,154,000. There are no records on the value of the premiere honeys produced from the fruit bloom.

Worldwide, there are an estimated 200-400 species of *Rubus*. Different botanists, who classify the plants in different ways, state there are between 50 and 390 species of *Rubus* in the U.S. All species are excellent summer foods for wildlife, especially birds such as grouse, pheasant and quail. Other birds feasting on the berries include grosbeaks, robins, thrushes and towhees. Small mammals like raccoons, chipmunks and squirrels eat the fruit, while deer and rabbits browse the leaves. The thorny, impenetrable thickets of brambles provide very effective cover for a wide variety of wildlife.

Wild blackberries provide excellent bee pasture for western Oregon beekeepers from early June through the end of July in the Willamette Valley. In the Coast Range and foothills of the Cascade Mountains, evergreen and Himalayan blackberries bloom from the beginning of July, continuing through August, providing valuable summer honey flow to which many beekeepers move their bees after Valley bloom is over. The resultant pollination of wild berries supplies a superb harvest for the wild gourmet.

The cultivated brambles of the Pacific northwest are a regional delicacy, and the source of premium honeys and wines. The wild berries are a source of delight to bees and their keepers, providing delectable honey redolent of bramble-blossomed fields, and succulent fresh fruits melting on the tongue.

What Did I Do Last Time?

o.b. wiser

The days are hot the end of June, divides are "cooking," some already going into their third box. It always seems this is the time of year that new queens are superseded, as the end of the dearth comes into sight.

The City of the Bees is my largest location with 40-55 hives. My sweat band (my own type) has just been taken off and put over my rear view mirror to dry out after I wring it as dry as I can. I have finished going through all hives to check for what I call **THE WORKS.** I have done this for so many years I don't have to think about what I look for.

The moment I lift the lid off the hive, I know if it is strong, weak, or medium, if it has AFB or if it is queenless. I can also tell if it is in need of food. All this before I even pull one frame.

Confirmation comes upon actual inspection. What I consider a total inspection is taking one or two hives down to their toenails – meaning I take all boxes off the hive and look at the number four or five frames, (the center three frames) of the second brood chamber of each hive.

Upon inspection of brood combs, I also determine if the hive is queenless or has a failing queen. If queenless, I look for queen cells and note their age to determine if I am going to let the bees raise their own queen. Usually, in June, if it is queenless and I do not see queen cells, I add a frame of young brood with eggs.

Then begins the most important part of beehive marking. I have looked in the hive and evaluated several factors, The most important are the following (time in hive 1-4 min):

Is the hive queenless? If it is, then I mark the back or side of the hive using lumberman's chalk, and I always use blue. Why lumberman's chalk? It is not a crayon. It is a chalk and in time will wear off and not affect paint. Marks from this year's chalk are always brighter and more obvious, while those from last year are faded. Blue fades to lighter color, whereas black – well, black is black.

The codes I use are below.

You will find these symbols and abbreviations are straight forward, simple and to the point. The **XXX** symbol for AFB was new to me years ago, but most commercial beekeepers use some form of an X to indicate AFB.

If you forget your chalk simply put one rock or stick or brick or whatever you can find on top of the hive, then the next time you will be

Continued on Next Page

Condition of hive	**Abbreviated code used**
1. Queenless	
A. With cells ----------	Q- cells (DATE)
B. Add eggs ----------	Q- +eggs (DATE)
C. Add queen in cage -------	Q- + cage (DATE)
D. Hopeless ----------	I add to another hive
2. Queenright	
A. Good Laying Queen -----	No mark is made on hive
B. Poor Laying Queen -------	Poor Q+ (DATE)
C. Drone Laying Queen ----	DL (DATE)
D. Virgin Queen ----------	VQ (DATE)
E. Hatched Queen Cell, but don't see Virgin queen --	Q- VQ? (DATE)
F Laying Worker ----------	LW (DATE)
G. Was queenless now queened	Put Slash through Q- (Q+)
3. Diseases	
1. American Foulbrood -----	XXX 3(last digit of the year)
2. European Foulbrood -----	XX3 (Last digit of the year)
3. Sacbrood ----------	SAC (DATE)
4. Others ----------	Nothing
4. Health of Colony	
1. Starving/Feed ----------	F1, F2, F3 (Feed 1-3 frames honey)
2. Weak ----------	W (DATE)
3. Very Weak ----------	VW (DATE)
4. Dead ----------	D
5. Strong ----------	S (DATE)
6. Super Strong ----------	SS (DATE)
7 Divide Hive ----------	(+ Division Symbol) (DATE)
8. Swarmed ----------	Q- Swarmed (DATE)
9. Super ----------	/ or //: one / = one super two // = two supers

LAST TIME ... Cont. From Pg. 213

flagged to look and try to find out why you left the rock on.

Back in the good old days I, too, used the brick method. I put one half of a brick somewhere on the hive to mean a specific thing. I found it harder than morse code so I graduated to a brick on the lid which meant any of the above. You figure it out. Finally I quit hauling bricks to the yard and just used a small rock that would not blow off. Then I discovered wonderful, blue lumberman's chalk and I always have the chalk with me.

You may want to transfer some of this information to a permanent record. Most of my marks just stay on the hive and are used for the next visit I make. I bought out a beekeeper with those horrible telescoping lids, each covered with metal complete with a 20 year history written on top in pencil, which stays forever. In fact, I was using one of those lids as a paint stand last month and sure enough 40 years later, I could still make out some of the conditions of the long-since dead hive. Writing on lids is not the best, because they can be switched by accident if you have many hives.

My Spring table used on March 30, 1992 looked like this

This table is the actual info I put into my daytimer. It all fits on one fourth of one page and I can get four different tables on one page, so I can see at a glance what has happened. By the way, the real work to recover from the mite attack took place in the next table and I changed column headings to indicate numbers of divides and AFB and number of queens needed. Recovering from mite kill is simply a matter of equalizing the hives and feeding to keep them alive, and hoping for warm weather.

"Good records make good beekeepers"

The chart uses eight columns that are left blank so that the important info can be put in for that visit. In July, what's important is supers and hive numbers. I keep track of how many supers are on each yard so I can plan my harvest schedule and know how to make up the truck loads.

Over the years, I have seen and tried a few high falutin' methods to keep track of bees. All have been miserable failures. I have a student who wants to pick my mind for a computer program on hives. When I was in grad school I thought the computer would be the ticket. Now, well, I lean on keeping the computer out of the beeyard and in the office. If any of the information collected in my Day Timer (Day Planner) is useful for economic reasons, it may have a place in a computer program. I'm still waiting to see one that is worth the chips it is programmed on.

On the equivalent of two sides of one page of a day timer, I have all the records I kept on over 280 hives for one full year. It is precise and all that I need. I like to make the charts before the season starts so I am not out in a bee yard putting the chart together.

When I'm done inspecting all the colonies I have made marks with chalk on those with problems. Then I simply take off my gloves, get my day planner out, and collect statistics while I lean on a hive. How many queenless, how many with AFB, how many need supers, did I treat this yard for AFB, and did I treat for mites. In the comments, I will often note that there is a good honey flow or bees are boiling over, supers are all full, or any of a hundred things.

I do not make a big deal about record keeping or spend a bunch of time (maybe 2-5 minutes per yard is all). But I've learned that when you come to divide or super or collect honey, you simply *must* know how many boxes to take or how much room you'll need on your truck.

And I Learned That The Hard Way.

Location	Date	Dead	Alive	Strong	Weak	Feed	Comments
1. Hackers	3/30	4	29	none	all	no need	mite kill
2. Cottonwood	3/30	8	17	none	2-4 frames	full of honey	mite kill
3. Waterplant	3/30	3	23	18	5	none	less mite kill this year
4. Pioneer	3/30	1	14	all strong all need dividing now	none	no need	no mites yet, good weather honey flow
5. Stake Farm	3/31	12	14	none	2 frames max	no need	treat all for mites
6. Sheepyard	3/31	14	14	5 hives	9	no	bring in divides
7. City of Bees	3/31	19	37	20	17	20 frames	good hives for divides

BRING IT ON HOME

Thoughts On Collecting Swarms

jeff ott

Last month I discussed the Swarm Retriever, used to collect swarms. "That's nice Jeff", you probably said, "But, I don't have the money for a swarm retriever . . now what?"

Not to worry. Although the Swarm Retriever is a great machine beekeepers have been successfully collecting swarms long before it was around. This month let's look at what you should consider before and while you are capturing swarms this season.

Swarming, as you probably know, is the honey bee's way of insuring the continuation of the species. Despite our best efforts as beekeepers a colony may swarm. Entire chapters in beekeeping books have been devoted to prevention yet the reader is often left perplexed or down right confused. What you need to do, management-wise, is talk with local beekeepers and find out what they do. Settle on a system you feel comfortable with then stick with it. After you have several seasons under your belt, *then* consider improvements or changes. But I'm not going to go on about prevention. Just remember, sometimes no matter what you do bees will swarm.

You may ask, "Is it wise to capture swarms, with the fear of mites and Africanized honey bees?" If a colony is infested with mites (either varroa or tracheal), it won't have the strength to produce a swarm. This still holds true today. Most figure that all honey bee colonies have some level of infestation of either or both mites. Therefore, if you don't collect swarms for this reason you won't save yourself from mites. You'll pick them up somewhere else, eventually, anyway.

However, if you live in a part of the country where the Africanized honey bee (AHB) is a real concern I would have to say don't go about collecting swarms. Some of the experts are advocating the destruction of these feral swarms. You do not want a colony of bees. Period. Moreover, as the AHB moves north, swarm collecting will

LOOK BEFORE YOU LEAP

Eight Questions to Ask

1. **What is the address of the property where the swarm is located?**
   Obvious, but often over looked. Ask for directions before you leave.
2. **What is the actual location of the swarm on the property?**
   In a tree in the backyard? A bush? On a fire hydrant? What and where, exactly. Advise the caller to keep children and spectators away. Tell the caller to leave the bees alone until you can get there.
3. **How high?**
   Know how high and tell them you cannot get the swarm if it is too high for you. If they are too high assure the caller the bees will probably leave before too long and will no longer be a "problem"
4. **Are they *really* honey bees?**
   Often, anything that flies is a "honey bee" to the uneducated. Ask what the bee looks like. Are they hanging, or flying out of a hole in the ground. Are they hairy, or shiny. Are they flying out of a paper-like nest? These are signs of the type of bee you're dealing with so you know what to expect before you leave.
5. **How long have they been there?**
   If they have been there awhile they will not be gentle. A "dry swarm" (honey stomachs no longer full of 'stored' food) can be nasty and cause problems. Spray the bees with sugar water let them feed, then spray again. Make them content before you move them.
6. **How big is the swarm?**
   Do you really want to drive five miles (or more) for a swarm the size of a softball? If it is big, will your collection equipment handle them all?
7. **Do they know where the bees came from?**
   If a neighbor has bees in his backyard, perhaps they should call him. They're probably his. Avoid the "ownership" problem.
8. **What is the phone number of a person to contact at the site?**
   Always get this. You need to have a contact there. If it is going to be a few hours before you can get to the swarm, call just before you leave. Swarms have the darnest knack of leaving right after the initial call.

(or should) be curtailed in these areas, too.

But for now, how do you go about getting swarms? If you have the time you can drive around during swarm season looking for one in flight or hanging off a tree next to the road. You can do it. I know beekeepers who keep gear in their trucks just in case that once in a life time "monster" swarm is found. But there are better ways to make sure you get swarms and the best way is through a swarm list.

If you belong to a local beekeeping organization, get the names and phone numbers of the beekeepers wanting swarms and distribute this list to local police and fire departments, the county extension agent, pest control operations and the newspapers, several weeks ahead of the season. They will appreciate your help. Usually the dispatcher will call down the swarm list until someone is contacted willing to pick up the swarm.

If you do not belong to a local organization, you can still take your business card or other letter of notification to the same departments and get the same results.

Now, we know we want a swarm or two, and the call list has been distributed several weeks in advance of swarming season. What's next? Prepare your equipment.

Earlier I mentioned some beekeepers keep extra equipment with them during swarming season. There are a couple of pieces good to have on hand. Even though you always read about how gentle swarms are, and you've probably seen beekeepers hiving swarms without a veil, *bring it along.* Until you get comfortable around bees, swarms and stings, always wear protective clothing. Minimally, wear the veil and bring your smoker, although you probably won't need it. It's better to have it and not need it than the other way around.

Next, know what you're going to put the captured swarm in. You probably won't keep the bees in this capture box so use your imagination, and just about anything will work. Use a cardboard box that can be closed and with an entrance hole cut in the side; a plastic five gallon bucket with a screened lid; burlap sacks work as do nucs or even hive bodies complete with frames, top and bottom board. Have several different types of collection containers along with you if possible. What works in one situation may not work in another. The important point here is *ventilation.* Bees must have plenty of fresh air and be kept out of the sun.

Before swarm season begins I securely staple a bottom board to a hive body with 10 frames of foundation. Swarms will draw comb quickly, so it is a good time to have frames of fresh foundation on hand. At any rate, I like to have several of these "swarm gathering hives" ready. If the swarm is conveniently located (next to the ground, or close enough I don't have to hold the empty equipment) I can shake or scrape the swarm right in the super, come back later in the evening, close it up and take it home.

A friend of mine uses old cardboard boxes that are about the size of a deep. It doesn't have to be exact. It just needs to be big enough to hold the swarm and convenient to use. He places the swarm in the box, folds it closed, slowly rotates it upside down and sets it on the ground. A hole he cut near the "top" of the box serves as an entrance to draw in the stragglers.

First, have your equipment ready. . .

So, now you have your swarm list distributed and your equipment in place – what's next? Wait. Check your own colonies for signs of impending swarms. If they are others around the country side will be too. It only takes one warm, sunny day and there'll be a flurry of swarms. Usually during the warmest part of late morning, the bees will rush out and their first landing place is often only a few feet from the originating colony.

This is when you're likely to capture *your own* colony. But don't try and put it back where it came from. Put it in a new hive, even in a different yard, although this is not necessary. For what ever reason, old field bees forget their old home and return to the new one. So, if you have only one yard it should be O.K. to place the new colony there.

What happens when the call comes in? After being on a volunteer fire department for over seven years I can tell you this – just like emergency calls, a swarm call comes just when you least expect it. Usually, just as you sit down at the supper table, or are heading out to a ballgame with your kids. You name the most inconvenient time, and that's when you'll get the call. That's why you should have your equipment ready to go, already loaded on the truck.

Often you'll get the call later in the day when the homeowner returns from work and finds the swarm on their porch railing, in their favorite shade tree, or somewhere else equally awful.

Ask those eight important questions. Know what you want and get all the information you need before you go out the door. This will save you valuable time, and avoid a lot of false runs.

When you get to the swarm, take a look around. Take in the *entire* scene. Is it safe? Will electrical lines interfere? What about children? Have the parents or other adults keep the kids at a safe distance. Make sure they actually are honey bees. Question again the person who called you, if they're around, or someone who knows something about the swarm. Ask a subset of the eight questions on the list. See if there are any changes to the story.

If the swarm is in an area that is attracting a lot of attention, get prepared to collect the swarm and get them out of there before most people even know you are around. If it is in a backyard or other secluded spot then you can afford to take a little bit more time.

Is the swarm actually a colony in the open. If it is a colony and not a swarm, expect defensiveness of guard bees protecting their home. Move spectators back further.

. . . then know what to do with it.

If it is a true swarm, look for the queen. She could be almost anywhere, but if you can find her, gently pick her up and put

Continued on Next Page

SWARMS ... Cont. From 217

her in a cage. Once you have the queen, you can control the entire swarm.

If the swarm is hanging on a low branch, you can give them a sharp shake into your capture container, whether an empty hive, cardboard box or a burlap sack. Look around after you do this and see what's left. Are the remaining bees clustering in one area. It is possible that you missed the queen and they found her. Take a look and repeat the process if necessary. If you use a box, nuc or hive to capture the bees, watch them settle down. You'll see pretty quickly if the queen is in the box. If she is, the bees will all start to head for the colony entrance. Bees on the outside will arch their back ends and fan. You may notice a slight citrus smell in the air. That is the component of the Nasonov pheromone that you can smell. Bees at the entrance are telling the flying bees where home and the queen is.

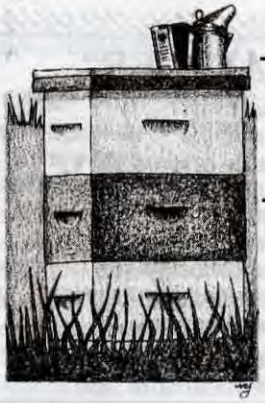
After you have gathered the swarm, there will always be stragglers in the air or on the place where the original swarm landed. If you can, leave the collection box in place until dusk, then take it home. This way most of the bees will be drawn into the box you leave. If you must leave

Make sure you've asked the right questions.

right away, tell the home owner or "person in charge" that there will be a few bees at the site for a day or two. If you have a spray bottle of soapy water, liberally douse the swarm site. This will kill remaining bees, lessening the potential of stinging problems later. Or, tell the homeowner how to do this, so they can handle the problem.

At this point the bees are yours. Sometimes it is nice to leave a pound of honey for the homeowners, especially if you've had to prune a branch or two to get to the swarm. Some beekeepers charge for collecting swarms. If you do make sure your fee (usually $25.00 - $30.00 in these parts) is known up front – in the initial phone conversation. Sometimes the homeowner expects you'll pay them for the bees, because, they figure, you're going to make loads of money from the honey. What ever, make sure it is settled up front.

Finally, do not take the swarm if it is too dangerous. It is not worth the risk or aggravation if you put yourself out on a limb – or in the hospital. Plan your moves and be prepared before hand. The rewards will only make the honey sweeter.



BEE TALK

richard taylor

"American Foulbrood can be easily controlled, but the medication's instructions are incredibly confusing."

Although this is being written on a day of a winter storm, it will be April before anyone reads it, and by then you'll know whether you lost any colonies to mites. I'm not going to talk about parasitic mites this time, other than to make a couple of important points. First, it is probably tracheal mites that cause most mite-related winter losses. If you find a colony with honey still in the combs but almost no bees, dead or alive, then that means tracheal mites. You can put the equipment right back to use, either by installing a package or, far better, by giving it three combs of brood and bees from colonies that survived plus a new queen. That's lots cheaper and you get a better result. Varroa mites, on the other hand, do their damage the year 'round. I'll say more about varroa another time.

This time I'm going to talk about combatting American foulbrood with Terramycin. I have found this very effective over the years, amounting to complete prevention. It is also very easy and safe to use, provided you observe the most elementary precautions. It is given to the bees in minute quantities, early in spring before any supers are on the hives. Some beekeepers repeat it in the fall.

The only problem with terra, as beekeepers call it, is that the formulations supplied by the manufacturer are frightfully confusing, and the directions for using it are hardly less so. Indeed, it took me years to figure it all out, even with help. Now I do not claim to be particularly smart, especially when it comes to scientific things, but I do know how to read, and it seems to me that directions for something like this ought to make sense. Here is my attempt to render intelligible what seems otherwise to be a morass of bewilderment and confusion. I just hope I finally have it all straight.

1. TM-25, which is the commonest formulation of Terramycin, is a mix of 25 *grams* of oxtetracycline hydrochloride in one *pound* of inert carrier. That is why it is called TM-25, though the package doesn't call it that. Unless you know the secret you don't know whether you have TM-25, TM-50 or what. So when you purchase a package of terra, what it contains is mostly the carrier, into which is mingled a small amount of the antibiotic.

2. The standard packet of TM-25 is 6.4 *ounces*. Thus, if you stop to figure it out, that packet contains *10 grams* of the antibiotic.

3. Other common concentrations are TM-50, with 50 grams of antibiotic per pound, and TM-10, containing 10 grams. So now you will see that the standard 6.4 oz. packet of TM-25 is equivalent to one pound of TM-10.

4. The first thing you need to know is whether you have TM-10, TM-25 or TM-50. The directions will state the concentrations, and you can figure it out, from what has been said above.

5. If, as is likely, what you have turns out to be TM-25, then you will read that it is useful in treating swine, calves, lambs, etc. There may or may not be any instructions for use with bees. For years there were not; you had to go ask someone's advice. But the last pack I got has directions for bees. They say to mix one level teaspoon of the mixture to one *ounce* of powdered confectioners sugar. This is profoundly impractical, because it assumes that you not only have a teaspoon measure with you, but a small scale to weigh out one ounce; or else, that you will take a standard two-pound bag of confectioner sugar and then measure out a level teaspoon of the terra thirty-two times! How much simpler it would have been just to give the amount of sugar in spoonfuls, same as the terra, or, to simply say how much of the terra to mix with the two-pound bag.

The directions next say, as an alternative, to mix one pound of TM-10 with two pounds of powdered sugar. Fine. But what you've got is TM-25, not TM-10. Okay, so now go back and recall that the standard 6.4 oz. packet of TM-25 is the equivalent of one pound of TM-10. There, now it all works out right! You just add your 6.4 oz. packet of TM-25 with the two-pound bag of sugar. Now why couldn't they simply have said that in the first place?

6. Now the directions become thoroughly weird. They say to apply this mixture "on the outer parts or ends of the frames", one ounce at a time. So again, it is assumed that you have in your apiary a tiny set of scales capable of measuring out one ounce for each colony. Why give the amount in spoonfuls? And what are the "outer parts", as distinct from the inner parts, of the frames? And how does one go about dusting the *ends* of the frames, and what would be the point of it anyway?

Now here's what it all comes down to. You dump two pounds of pow-

Continued on Page 222

BEE TALK ... Cont. From 220

dered sugar into a small bucket, add your packet of TM-25, and mix it all up good. (Use four pounds of powdered sugar if what you've got is TM-50). Then using your hive tool as a ladle, throw about a tablespoonful of this over the top bars of the combs. It takes but a few seconds per colony, and the bees carry the dust away in an hour or two. Minute quantities end up inside the brood, and that nips any foulbrood in the bud.

If you take your little bucket of this mixture to your apiary you will find it is sufficient for dealing with about 40 colonies, or with 20 colonies twice, and so on. The exact amount given to each colony cannot be critical, especially in the spring, since there is such a wide variation in the colonies. Some will have only two or three combs of brood, and others will be three times as strong, with six or ten combs of brood. You should, however, try not to overdose, as too much of this stuff can be mildly harmful o the bees; or at least, so I am told.

It would be difficult to imagine a set of instructions more confusedly composed, with critical information obscurely buried, measurements in grams combined with measurements in ounces, measurements in weight combined with measurements in volume, and the whole business requiring translation. It all just boils down to this: Mix your packet of TM-25 with two pounds of powdered sugar and give about a tablespoon, more or less, to each colony.

QUESTIONS?

Menthol Now?

Q. In one of my apiaries, of twelve colonies, five were dead this spring, (March), apparently from tracheal mites, since there was no other sign of disease and there was honey but few dead bees in the dead hives. Should I use menthol in the remaining colonies?

Duane Waid
Interlaken, NY

A. No, it would be pointless now. The remaining colonies will probably all rebuild and deal with the mites themselves at this stage of the season. Mites spread fastest in the winter clusters.During the warmer seasons it appears they do not seriously affect hive populations or honey crops even when they are present.

Ed. Note: However, a late summer/fall treatment with menthol is most beneficial, and will significantly reduce mite populations going into winter.

Mixed up?

Q. Can I keep Italians, Carniolans and Caucasians all in the same apiary? I have head that cross breeding can result in cross bees.

Craig Pullman
Arma, KS

A. Queens fly considerable distances to mate and normally mate with several drones, so there is likely to be much cross breeding no matter what you do. And cross breeding does not necessarily result in cross bees anyway. I don't think it makes any difference if your apiary has different races of bees.

Ed. Note: The assumption here is that you are letting these colonies raise their own queens. If that is the case, you will soon *not* have distinct races of bees in your colonies, but only mongrels. Conventional wisdom says to regularly requeen with queens of known heritage, eliminating any problems.

A Date with a Queen

Q. In requeening, when should you introduce the new queen – right after destroying the old one, or several days later, or ten days later?

Bob Lyons
Pincher Creek, Alberta, Canada

A. At the same time the old queen is removed. If you wait, then the bees will immediately begin queen cells, greatly reducing the likelihood of acceptance. If you wait ten days they will have sealed queen cells, making acceptance virtually impossible.

Keep it Simple

Q. Do you have a set of plans or dimensions for making an observation hive? I would plan on using two or four full-depth frames, one over one or two over two.

L. M. Panzer
Ridgefield, CT

A. You can set your own dimensions, so long as you observe the following: A single full-depth frame, or one full-depth plus one half-depth frame, is best. Do *not* have any frames side-by-side, for you will in that case seldom see the queen. The space between the drawn comb (i.e., the top bar) and the glass panes must not be more than one-quarter inch; otherwise the space will be filled with burr comb. Put vaseline on the edges of the glass panes, so you can slide them out for cleaning. Plan to feed your observation colony sugar syrup during nectar dearths, as the bees can exhaust their stores and starve quickly even in midsummer.

Separate, but equal

Q. How long can you keep queen bees in a queenless nursery?

John E. Palmer
New Market, NH

A. A queenless nursery is a queenless nuc. One or more queens can be kept in such a nuc by fastening the mailing cages into an otherwise empty frame and putting this in the middle of the nuc. A three-frame nuc works fine. Queens can also be thus kept in a queenless full-size colony, but it is needless to render a full colony queenless just to get a nursery. As to how long they can be kept thus, the answer seems to be, almost indefinitely, so long as the nuc itself is fed when necessary, and an ample supply of house bees is available. These may, on occasion, need to be restocked by adding a frame of brood ready to emerge from another colony. I have heard of a beekeeper who put a queen, still in her cage, into a hive, forgetting to remove the cork at the candy end, and he found her, still in the cage, alive and apparently healthy, months later, even though the colony had meanwhile raised another queen. Usually a queen will destroy any other queens, even while still in their cages.

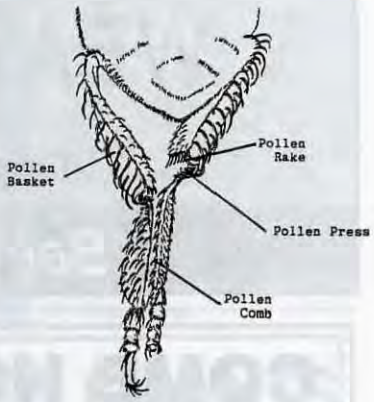
Questions are welcomed. Address Dr. Richard Taylor, Box 352, Interlaken, NY 14847, enclosing stamped envelope for response.

ANSWERS!

Richard Taylor

?Do You Know? Answers

1. **True** During the pollen collection process, worker honey bees moisten pollen with regurgitated honey or nectar to produce a paste-like condition suitable for packing pollen loads.
2. **True** The outer covering of pollen grains, called the exine, is made of a tough substance that resists decay or breakdown. Therefore, pollen grains retain their characteristic shapes even through millennia, and are useful in studying climates and vegetation of the past.
3. **False** Pollen is the male germplasm of plants. Each pollen grain contains a vegetative nucleus which controls the growth of the pollen tube and two nuclei which are the male sex cells. One of these sex cells will join with and fertilize the egg nucleus in the ovary of the flower.
4. **False** Pollen supplies the honey bee with protein, fats, vitamins and minerals, however, is a poor source of food energy. The active adult needs to consume honey or nectar for adequate energy.
5. **True** Several researchers have shown that the nutritional value of pollen decreases upon storage. Fresh pollen is 100% effective in stimulating the development of hypopharyngeal glands in worker bees. In comparison, one-year-old pollen had a 76% decrease in effectiveness and two-year-old pollen did not cause initiation of brood food gland development. Growth and increase in nitrogen content of bees fed fresh pollen is superior to that of stored pollen.
6. **True** Pollen grains from different species of flowers will be of differing nutritional value to the honey bee, partly because of the different amounts of protein in pollens. Some pollens have also been shown to be deficient in certain essential amino acids.
7. **False** Yellow sweet clover blooms about two weeks earlier than white sweet clover and where both are present, a long honey flow may be expected.
8. **False** The Beltsville Bee diet is a commercial pollen substitute, that does not contain any natural pollen. A pollen supplement consists of a source of protein, such as soybean flour, fortified with pollen.
9. **True** The various species of clovers have contributed more to honey production in the United States and Canada than any other groups of plants. While there are many different species of clovers grown, the ones of major importance for honey production are: White and Yellow Sweet Clover, Alsike Clover and White Clover.
10. B. Anthers
11. A. 8-40 % protein
12. C. 5 mesh
13. B. Mistletoe
14. F. Cranberry
15. D. Sages
16. A. Saw Palmetto
17. E. Red-Bud
18. C. Dandelion
19. Anther dehiscence is the process of the anther wall splitting open when pollen grains are mature, making them available for collection and distribution.
20. To obtain a load of propolis, workers first use their mandibles t o bite off pieces of plant resins from buds and then pass the propolis on to the forelegs. The load is then transferred to the inner surface of the middle leg (basitarsus), on the same side of the worker's body. The middle leg is next used to press the propolis into the pollen basket (corbicula) of the hind leg, again on the same side.

    Pollen collection and packing is different. Pollen is gathered from anthers by movements of the legs and the mouthparts as well as by pollen which adheres to the body hairs. The forelegs brush the proboscis, and also clean the pollen from the head and the front of the thorax. Pollen is transferred from the forelegs and the rear portion of the thorax to the middle legs. Pollen on the middle legs is passed to the pollen combs on the inner hind basitarsi by scraping the middle legs past the pollen combs. These pollen combs also scrape pollen from the abdomen. The pollen rake of the opposing hind leg scrapes the inner surface of each pollen comb, which results in the pollen being transferred to the pollen press on the opposite hind leg. Finally, the pollen which has accumulated on each pollen press is forced into the pollen basket by pumping the legs.
21. 

There were a possible 25 points in the test this month. Check the table below to determine how well you did. If you scored less than 12 points, do not be discouraged. Keep reading and studying- you will do better in the future.

Number Of Points Correct
25-18 Excellent
17-15 Good
14-12 Fair

GLEANINGS

APRIL, 1993 ALL THE NEWS THAT FITS

Delaplane Hosts New Show

T.V. BEEKEEPING SERIES

Beekeepers and wanna-bees can tune in to an eight-week series on Georgia Public Television called "Honey Bees and Beekeeping: A Year in the Life of an Apiary"

Keith Delaplane, a University of Georgia Extension Service entomologist, hosts the half-hour series, which begins Saturday, March 27, on GPTV stations at 11:00 a.m. The program follows the workings of an apiary, including building hives to receiving and installing bees, migrating hives, queens and packaged bees, diseases and pests, harvesting and processing honey, overwintering hives and Delaplane's Ten Commandments of Beekeeping.

Viewers are encouraged to also order a book to accompany the series, which will give more information on beekeeping throughout the year. Called "Honey Bees and Beekeeping", the book is available for $12.50, plus postage from GPTV, or from the A.I. Root Co. when available.

Keith Delaplane hosts "Honey Bees & Beekeeping" on Georgia Public Television.

The series is produced by the UGA Extension Service and the Georgia Center for Continuing Education in Athens, GA.

Bad Apples

IMPORTS NOT LABELED

Surprise inspection that caught workers at WA state packer/shipper Chief Wenatchee repacking New Zealand apples into boxes labeled "Washington apples" is tip of much larger scandal. As reported in *The American Fruit Grower* in December, three California produce firms have been charged with same offense and more recently another three companies were named. In the case of Chief Wenatchee, a cooperative that is one of Washington's larger fruit packers, USDA is seeking to revoke its PACA license for two years. This license – required under Perishable Agricultural Commodities Act – is necessary for fresh fruit sales. Without it, Chief Wenatchee would be shut down. USDA is also after Richmond, WA -based exporter WLH Group Inc., which allegedly conspired with Chief Wenatchee to export misbranded apples to Taiwan. WA Apple Commission has also initiated legal action against Chief Wenatchee for label infringement (misuse of WA logo).

TEXAS HONEY QUEEN

Christy Michelle Oakley, 1993 Texas Honey Queen, is the daughter of Jimmie and Kay Oakley of Round Rock, Texas. Christy is a Psychology major at Texas Tech University in Lubbock, Texas.

Having worked in all areas of the family bee business, Christy will draw on her experiences in promoting all aspects of the Texas beekeeping industry.

She is sponsored by the Williamson County Area Beekeepers and the Texas Beekeepers Association.

PA GRANTS GRANTS

The Pennsylvania Dept. of Agriculture announced the awarding of two research grants for the calendar year 1994. The first study will be conducted by Ronald Romig PhD., Dept. of Biology, West Chester Univ., West Chester, PA. Dr. Romig's study is titled, "Effect of Honey Bee & Other Pollinating Insects on Qualitative & Quantitative Yields of Snap Beans in PA" The second study will be conducted by Maryann Tomasko, Apiculture Extension Specialist, and Shelby Fleischer PhD., both with the Dept. of Entomology at PA State Univ., College of Agricultural Science, University Park, PA. Their study is titled, "Pollination of Pennsylvania Cucurbits & the Effect of a New Pesticide on Pollination" The total dollar amount of these awards is $71,411.21.

These research proposals were strongly supported by the Pennsylvania State Beekeepers Association. The PSBA has actively sought research proposals from the five resident researchers at different Universities throughout the State. Over the past five or six years scientists at Penn State, Delaware Valley College and now West Chester University have shared in almost $300,000.00 of research moneys directly supporting bee research. In January Sandy Fisher, the former Vice President, became PSBA President replacing Dr. Bob Brooks who had served four years as President.

SEND YOUR NEWS TO *GLEANINGS*

Texas Counties Having Confirmed Finds of the Africanzed Honey Bee
February, 1993

NEW CROP ATTRACTANT INCREASES VALUE

Two Simon Fraser University professors have used their synthesized honey bee queen pheromone to attract bees to hard-to-pollinate crops.

Mark Winston and Keith Slessor were the first in the world to identify the substance queen bees secrete to attract pollen-gathering worker bees.

The study of social-insect pheromones is new – bees are estimated to produce at least 36 pheromones. But virtually all are secretions that elicit a specific behavior.

The queen sociochemicals belong to a different class, called primer pheromones that exercise a more fundamental level of control by mediating worker and colony reproduction and influencing broad aspects of foraging and other behaviors.

Their existence was well known, but their identification and synthesis had proven difficult.

Winston and Slessor had been researching queen pheromones for some time when they happened to put a glass lure coated with queen mandibular extract next to some stray workers on a laboratory bench.

To their surprise, the workers formed a retinue around the lure.

"Clearly the extract had properties its major known constituent did not," they reported. "This was exciting because the retinue response is easily recognizable and takes place immediately."

They developed a bioassay based on the retinue response that was a particularly sensitive indicator of pheromonal activity. Their bioassays evaluated complete or fractionated mandibular extracts.

Eventually they identified the components of five active fractions and then developed a synthetic blend of five components that duplicated the activity of the natural mandibular secretion.

The pair then took their research a step further, spraying notoriously hard-to-pollinate crops such as pears and cranberries with the artificial pheromone.

They selected two orchards that consisted of two varieties of pear – Bartlett and Anjou – as well as two orchards consisting of Red Delicious and Golden delicious varieties.

Some trees were sprayed with the artificial pheromone.

The results were beyond all expectations.

"We've had some stunning successes," said entomologist Winston.

Pear and apple trees sprayed with the pheromone were suddenly more attractive to bees under a wide range of conditions. When the fruit developed, pheromone-treated plots had more medium and large fruit and fewer small pears and culls.

"It ends up increasing the number of bees foraging on the crop and gives you better pollination, which gives you bigger fruit and makes you more money," Winston said.

The researchers found using the pheromone increased the crops by C$1,055 a hectare. They said the increased average orchard revenue was C$1,161. The cost of the pheromone was put at C$81 a hectare and the average spray cost was C$25 a hectare.

With cranberries the increased earnings were up to C$44,250 a hectare and with blueberry, the increase averaged C$986.

The researchers said the artificial pheromone could also be used for transporting bee packages without a queen.

Until now, packages invariably contain a queen because her presence prevents workers from becoming agitated and overheated.

But there are not always convenient or reliable sources of queens for package producers, while some beekeepers prefer to purchase their own queens.

"The results demonstrated synthetic queen mandibular-gland pheromone lures can be used as queen substitutes in the shipment of packaged bees and possibly in other applications," the researchers said in a subsequent paper.

They said pheromone lures could also serve as queen substitutes in situations where logistical problems result in queens being temporarily unavailable.

They said the synthetic pheromone could also be useful for maintaining units of bees larger than packages.

"Ultimately, large colonies might be pacified during periods of queenlessness, or made purposely queenless to direct segments of the workforce away from brood rearing to foraging.

All this should mean more money in the pockets of farmers, beekeepers and honey producers.

The two men hold a patent on the pheromone, and the patent has been licensed to Pherotech, a company in British Columbia.

"We have yet to make any income on it," said Winston. "They are marketing the pheromone and at some point, we may receive some royalties, but I don't think we'll ever get rich on it."

"The excitement in doing the research and in being able to do something that has proven to have some benefits in B.C. and Canada," Winston said.

The pair recently won a gold medal for their "outstanding contributions" from the Science Council of British Columbia.

Slessor has spent most of his career studying the chemistry of insect communication. Winston, who is considered an expert in insect behavioral ecology, looks forward to years unraveling the mysteries of the honey bee.

–Alan Harman

BEEKEEPING MUSEUM

Beekeeping has a long and colorful history throughout the world. Some countries, for many years, have had craftsmen design and build complicated hives and associated pieces of equipment while other areas of the world have continued to build and use simple hive equipment. Yet, the objective is the same – Bee Culture.

In the original administration building of the OH Agricultural Research & Development Center (1896), a modest room has been designated as a bee paraphernalia museum. If the exhibit proves to be popular, additional space will be allocated to the developing museum.

The small museum has various hive styles that have been used within the U.S. as well as smokers and glassware. A special holding of the museum is an envelope from L.L. Langstroth's queen production business in his script. In a nearby yard, several hives of unusual design, though not necessarily antiques, are stocked with bees and are functional. Additionally, for those interested in plant material, a 60-acre arboretum, having many bee plants, is located on the grounds of the Research Center.

The beekeeping museum is a permanent feature of The Ohio State University and actively solicits contributions to the Museum's holdings. Due to staffing shortages, the museum hours may vary, at times but it is generally open during most days from 9:00 – 5:00. However, phoning before stopping by is a good idea.

For additional information, contact: The Honey Bee Laboratory, Ohio State University Extension/OARDC, 1680 Madison Avenue, Wooster, OH 44691. (216) 263-3725.

Display Index

In English, Please.

harold f boretz

BOTTOM·BOARD

It was less than a month ago that I sat on the floor silently cursing a leading toy manufacturer for subjecting me to eight pages of "easy to assemble" instructions. Referring to one of six possible models, and alluding to innumerable "clearly marked" plastic parts, these instructions, written in three languages by a schizophrenic engineer, led me ever onward toward my eventual goal, a fully assembled, operational slot car track, capable of doing everything you could think of with the possible exception of milking the neighbor's goat.

"What", you may ask, "Does this have to do with beekeeping?" Let me see if I can explain. Whether you are for the first time assembling a slot car track, changing a flat tire, operating a power tool or beginning to keep bees, you are going to be exposed to the instructions and directions of others.

At first glance this seems like a viable means of accurately and systematically transferring knowledge. Without it we would unendingly be "reinventing the wheel" Furthermore, having in the past successfully used this learning technique (believe it or not, I can change a flat tire), I decided to employ this method again.

With this in mind, I bought several books explicitly designed to instruct the novice in beginning beekeeping. I'd have this figured out in no time. After all, I could change a flat tire. And what's more, these books were written in only one language at a time, or so I thought.

Oh sure, it looked like English. It even sounded like English, but I soon knew better. Think about it for a moment. Would anyone really writing in English refer to an object made of eight boards, designed to fit on top of a hive stand as a bottom board? After all it wasn't on the bottom, and it wasn't one board. They even warned you in the next paragraph that if you put it on the bottom it would soon get wet causing both bees and equipment to suffer.

Then, they had pictures of these boxes. You know the ones. The ones the bees live in. The ones they call supers, brood chambers, food chambers, section boxes, and section supers. Why couldn't they just call them boxes? That's what they were. I understood they came in four or five sizes. I didn't understand why, and furthermore, I didn't understand why after all of this, they then said that box hives were illegal. If you didn't use these boxes, why were all the bee supply houses advertising them for sale? What were you supposed to use; those straw things? I think they called them skips or skeps or something like that.

Then, just to complete my confusion, they started to talk about frames. I could understand why the frames come in a variety of sizes. After all, if you are bound and determined to have a half dozen different sized boxes (supers, chambers . . ?) then it follows that the frames should be designed to fit the boxes. But why ten frames for each four sided box? Wouldn't you just frame each wall, and therefore only need four frames for each box?

Well, whoever it was who wrote these instructions must have realized they were wrong about the ten frames in each box. However, rather than admitting their mistake, they tried to cover it up by saying that the foundation also came in a variety of sizes because it was meant to fit inside the various sized frames. Now, I'm no carpenter, but I know a foundation goes underneath a building, whether you're talking about a garage, a raised ranch, a skyscraper or for that matter a beehive, and you only need one. You certainly don't need ten for each story of your building, and you cannot convince me that the foundation fits inside the frames. That's just ridiculous. Any fool who has ever seen a house being built knows that the frame goes on top of the foundation!

Finally, why on Earth would anyone want to put cement in a beehive in the first place? Of course cement. Weren't we just talking about foundations. Maybe it's used to shield the beekeepers from the radiation. What radiation? Why the radiation in the NUKE boxes, of course. Why else would they be called NUKE boxes?

Boy, I thought I was confused.