



Bee Culture

JULY 1993



LOOSING



LOOSESTRIFE



J u l

COLUMNS

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BAPTISIA australis



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FEATURES

Fall Requeening

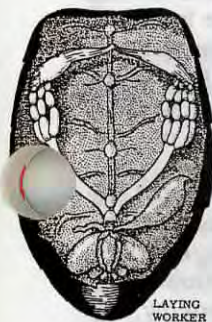
There are lots of good reasons to regularly requeen. This year think fall instead of spring - for some very good reasons.

(by Richard Bonney)
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Laying Workers. A Primer

How do you know if one of your colonies has laying workers? And what do you do if it does?

(by Roger Morse)
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Other Stinging Insects

Wasps, yellow jackets, hornets - all can cause problems for honey bees and beekeepers. Controlling them, in and around apiaries isn't difficult - but you need to know how.

(by Cindy Grahl)
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Loosing Loosestrife

Purple Loosestrife is a mixed blessing, but its downside far outweighs its good. But there may be an answer.

(by Kim Flottum)
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Some Thoughts On Bee Removal

Sometimes honey bees are pests, and have to be treated as such. When they're inside the walls of a house that treatment may not be very gentle.

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Firemen using soapy water get bee spill victims out of sticky situation.

(by Linda Seubel)
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LYTHRUM
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Pesticides & Honey Bees

Dealing with colonies that have been hit with a pesticide spray is expensive, time consuming and hard work. But to save those that live is worth the effort.

(by O.B. Wiser)
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Build A Better Business Plan

Any organization, no matter how big or small, needs a good plan to succeed. Here are the basics to a better beekeeping business plan.

(by Bob Smith)
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Harvesting & Packaging Round Comb Honey

You have complete and perfect control over at least one aspect of this product.

(by Diana Sammataro)
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Cover

This is the time of year that some of the less noticed management techniques get waylaid. For instance, this tired forager stopped to rest about three feet in front of her colony - somebody forgot to cut the grass.

Others are searching far and wide for water (the pail didn't get filled last week), and still others are laying down a new layer of propolis over the crack in the split bottom board.

But some are out there foraging - and, if they're near anything resembling a wetland, they've probably found some loosestrife - but this honey plant may not be around for long.

What Kind of Bee?

Too often honey bees are blamed for the actions of other insects. Here's a handy guide when someone asks you. What Kind of Bee? (by Bee Culture Staff)
Inside Back Cover



INNER · COVER

One result of the invasion of tracheal and varroa mites has been the accelerated mortality of the wild colonies that inhabit the hidden places of America. Or so we are told, and tell those we think should know. Like members of Congress. Fruit and vegetable growers. The media.

Of course this same invasion has not been kind to the bees we more or less keep in boxes either. And we've been quick to point that out to these same groups, too.

It's pretty easy to know just how many boxes were empty this spring – simply lift the lid. But measuring activity in bee trees or old attics is not as easy. In fact it is mostly impossible.

So this past spring we took a rather informal survey of a whole bunch of folks spread out over most of the country, and we asked them about swarms.

We asked how many they'd seen this spring (more, the same, or fewer), and we asked about size (larger than 'normal', the same size as 'usual', or smaller than 'normal').

Now before you start asking all sorts of questions about how accurate our results are, or what other factors we considered let me repeat – this was an *informal* survey. Fewer managed colonies will result in fewer swarms, and we didn't cover the *whole* country, but the results are informative, we feel, so read on before you get too picky.

Hardly anyone saw more swarms this year than in the past – only 8.0% – but they were all about the same size as usual. Nineteen percent felt things were about the same – average number, average size.

But almost three quarters – 73% – reported few, if any swarms in their area this spring. Those that were spotted, however, were about the same size as usual.

The colonies that were healthy enough to swarm did so in typical fashion, and for the usual reasons. But, there just weren't as many this spring, it seems. Maybe only a quarter of what we normally see.

Yes, fewer managed colonies alive this spring means fewer swarms will be seen anyway, there just aren't as many bees anymore, anywhere.

A three quarters drop in the number of swarms has meant an even greater drop in the number of phone calls I get each spring. Beekeepers are keen to find those bees to replace lost stock. Makes sense, too. If a colony swarmed it had to be healthy, so should be the swarm, or so says conventional wisdom.

Fewer bees, fewer calls, fewer beekeepers. It truly has been a silent, silent, spring.

It was June, 1933, when Virginia Waltz started working at the Root Company. She had just graduated from high school and wanted a job, and since the Root Company was one of Medina's biggest employers in those days, it was a natural place to look.

She started in the candle rolling part of the business. We hand rolled candles then, foundation in the center and flat sheets on the outside. They were dripless, but they burned fast.

"My hands were always soft, because of the beeswax" she said, "but we worked longer hours then than we do now. We worked every Saturday during World War II", she added.

After candles she got into the honey bottling business, packaging all sorts of varieties, including creamed honey, and one with raisins in it.

For awhile she was the mail person, then a dispatcher, but in 1941 she moved to the order department, eventually becoming the department supervisor.

For the last 20 years Virginia has been the Traffic Manager, responsible for traffic control, routing and damage claims for candles and bee supplies.

Along with bowling, tennis, piano and violin playing, Virginia collects stamps, and has been doing so for many years. She recently showed me her collection, with samples from all over the world, collected from Root Co. mail, mostly from the beekeeping side, since that's where most of our exotic mail comes to.

And she often asks about bees, swarms, honey and the rest of this side of our business. She knows as much as most about the subject.

She still walks the five or six blocks to work, when the weather cooperates, catches sports on T.V. and has no plans to retire.

"I'll be here until I fall over," she said the day of her 60th anniversary.

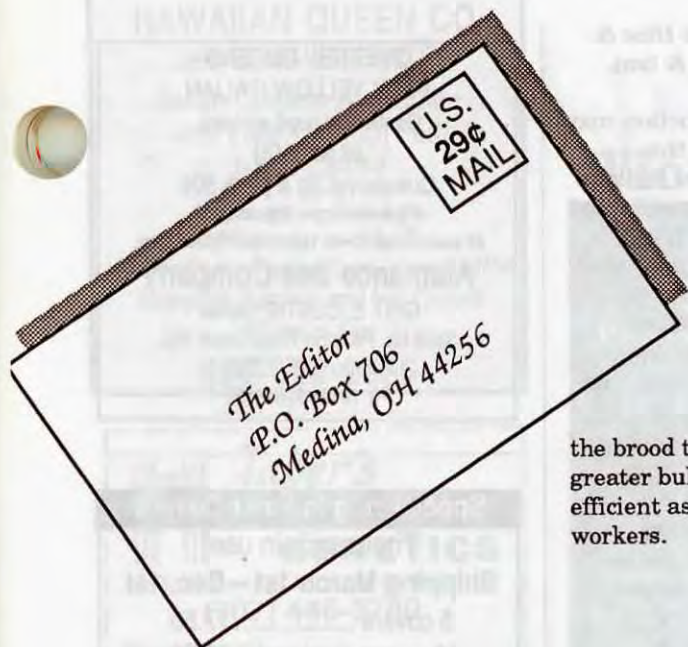
I don't know how long it will be before Virginia decides to slow down, but I am envious of her energy, her enthusiasm. And I'm glad I know her.

Congratulations, Virginia. Here's to 60 more.

Kim Flottum

Silent, Silent Spring

MAILBOX



the brood to keep it warm. Their greater bulk makes them more efficient as heaters than are the workers.

Rev. C.H. Bopp
Kirkwood, MO

exactly if there is a pollination operation size factor entering into the picture, but I suspect there probably is. In any event, I believe that more research needs to be done on pollination pricing to determine:

- what type of returns are being seen in the pollination business
- what type of returns are required for operations to enter and stay in the pollination business
- if there is a size factor entering into the picture

More research needs to be done in the pollination pricing area. It is unclear that pricing pollination based on wholesale honey prices is the correct pollination pricing strategy. If one was entering into the pollinating business, he would have to receive at least \$1,350 for 30 hives or \$45-\$50/hive for a reasonable return.

David E. MacFawn

■ Vitex Source

In your May '93 issue Michael Fisher, Quarryvill, PA wants to know of a Vitex source. Well sir, I'm happy to tell you that I've had very good luck with Vitex. I have seeds and plants and would be glad to send anyone seeds or plants, and any information or instructions on planting.

Sylvia Bullard
9801 Lyman Dr.
Pensacola, FL 32534

■ Pollination Doesn't Figure?

I enjoyed very much Caroline Niles' article, "Bee Man of Owensboro" in the March, 1993 issue of *Bee Culture*. I was very interested in the pricing strategy that George Jones uses to price his pollination services. In discussions with several other beekeepers and also entomologists in North Carolina, I have noticed that most people in North Carolina who do pollination services tend to migrate in and out of pollination over a period of several years. It is my hypothesis that the pollination business either has flat or negative profits for most pollinators. After entry into the pollination business, it takes several years for a pollinator to realize that he is not obtaining a positive cash flow. It is unclear

■ Lower Price

Thank you for informing your readers about the video "Queen Bee Finding, Marking and Clipping" I have just been informed there is a new and better price for the video. It

Continued on Next Page

■ Dependable Drones!

Very often we hear the statement that the only useful function of the drones is to mate with the queen.

I have an observation hive with a drone-laying queen. As the number of drones increases and the workers decline, the hive drones cluster over

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is now only \$24.95 including mailing and can be purchased from: Office of Agricultural Communications and Education, 1301 West Gregory Drive, Urbana, IL 61801, Tel: 217-333-4780. The former film center had priced it too high.

Gene Killion
Univ. of IL, Urbana-Champaign

■ Wild Honey Bees - Extinct?

They could be. This is due to several factors: Two parasitic mites, American foulbrood, irresponsible spraying, several mild winters that are hard on honey bees.

Quote: "When John Eliot translated the Scriptures into the language of the Aborigines of North America, no words were found expressive of the terms wax and

honey." (*Langstroth on the Hive & Honey Bee* Chas. Dadant & Son. 1889).

Considering this extinction may have happened before on this continent, is it any wonder Indians introduced white men to maple and walnut syrup, and crops that required no insect pollination, like corn, sweet potatoes, potatoes, tomatoes, and chocolate? The Indians and Buffalo clover, (now nearly extinct) - did it without the honey bee around. It looks like wild honey bees could soon be a thing of the past in North America. The swarm coming in from the wild into the boxes so often vacated by infested bees are usually infected with the parasitic mites themselves.

A long residual insecticide - Pennacap M®, an encapsulated Methyl parathion, is destroying pollinating insects including honey bees. Although this effect has been published in excess of 14 years, this pesticide is still used on cotton, alfalfa, and spraying orchards. Should we give it back?

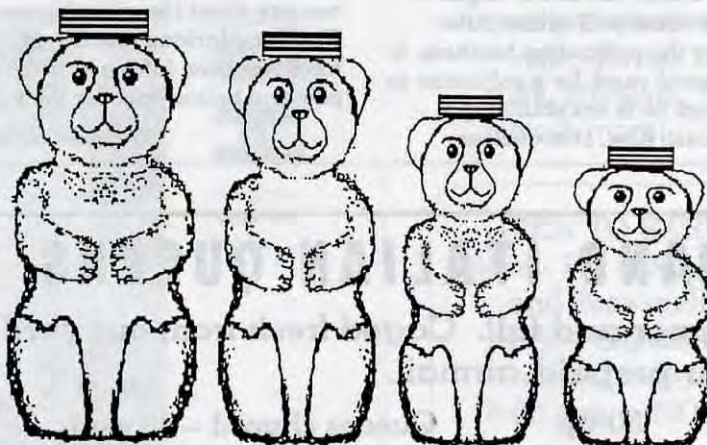
Sam Powell

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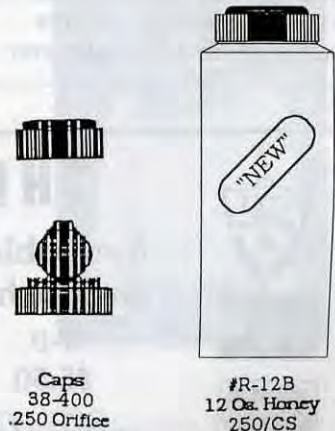


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BOOK REVIEWS

From Honey Plants To Honey

Flora of West Virginia

This book is for anyone living in the Southeast part of the U.S., or anyone travelling in that area who is interested in the plants of the region. It is an incredibly thorough review of every plant that grows in the Appalachian area of the U.S. – as varied a paradise for honey plants as found anywhere.



BAPTISIA australis

It is a scholarly text – a plant key – that describes 2155 plant families, and thousands of individual plants. But it is easy to use, even for those not familiar with botanical terms, as it has an excellent glossary.

It also includes helpful tables and charts regarding West Virginia's temperature, precipitation and snowfall, as well as vegetation maps, topographic profiles and short pieces on each of the counties and plant regions.

Although written by, and for West Virginians, it is useful to anyone in the region, and, since many plants are endemic to areas far outside the state, almost anyone east of the Mis-

issippi would find it useful. Flowering dates are given for West Virginia.

For those not terribly botanic the keys often omit features that are better represented in the excellent line drawings, placed close to each description for fast and easy reference.

Meanings of the Latin words used as the scientific names of plants are given because they frequently have a practical significance to the plant's description. Common names are included, if they exist, for each species for easy reference in the index – which is all-inclusive.

If you don't know what that plant out in the back woods is you keep seeing bees on every July, here's the perfect way to find out. And, in the process you'll learn much of other plants.

Here's a sample of one entry – of which much more is found elsewhere in this issue.

Lythrum salicaria L. (like a willow), spiked loosestrife. Tall erect perennial, less downy, 6-9 dm high; leaves lanceolate, opposite or in whorls of 3's, sessile, cordate or clasping at base; flowers magenta, 1.2-1.6 cm broad, in dense compound terminal, interrupted spikes; stamens 8-10, alternately longer and shorter. July-September. In swamps and meadows. Frequently seen in cultivation; established as an escape, Arden, Barbour county, Lake Floyd, Harrison County, and Salt Sulphur Springs, Monroe County. Introduced from Europe.

Flora of West Virginia 2nd Edition. 5-1/2" x 8-1/2" 1079 pages, cloth. Available from Seneca Books, Rt. 6, Box 81-B, Morgantown, WV 26505. \$40.00 + \$2.00 shipping (304) 594-1324.

Super Formulas

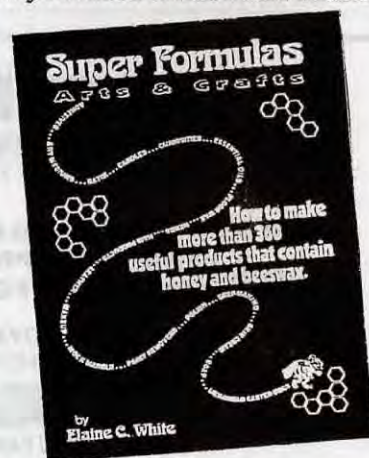
Have you ever wanted to make crayons with beeswax? How about honey ale? Or Honey Jelly? Maybe mead, or copper cleaner?

How much does a half cup of melted beeswax weigh? Have you ever made grafting wax, or brewer's pitch, hoof grease or fly paper, paint stripper or mosquito repellent?

How about making skeps or skin creams, soap or slug killer?

Elaine White has spent years in her kitchen making and testing (and remaking) hundreds and hundreds of concoctions and brews, formulas and powders and pastes. She has finally put the finished products together in a recipe book (of sorts) that has, as near as I can figure everything you can make with honey, wax, propolis and even things to make to help you make honey, wax and propolis. I'm not a cook by nature or skill (bless the inventor of the microwave), but even I had no trouble putting together several of the recipes that seemed interesting. And they worked, first time, just like she said they would.

There are a few food recipes included, but very few. It is mostly all the other things in the world you've always wanted to know how to make,



but couldn't find the recipe, or even more importantly – the ingredients!

It is this portion of White's book that is even more outstanding than the recipes – the "Source List" at the back of the book.

The recipes or formulas are straight forward and simple. White doesn't spend time or space with lots of explanations – just the facts. For instance, one formula describes how to make the glue used to apply your 'ungummed' honey labels to your honey jars. For you purists

Envelope Glue

This is a moistening type glue for stamps, labels or the flaps of envelopes.

- 1 Tablespoon gum Arabic
- 1/2 cup water
- 1 Tablespoon laundry starch
- 1/4 cup honey
- 1/4 teaspoon wintergreen essential oil (for flavor)

Heat ingredients in a double boiler for 15 minutes. With a brush, apply a very thin coat of the hot glue to paper and allow to dry. Moisten to seal envelopes or apply labels.

See? Easy as pie (and the labels don't fall off). I do, however recommend the wintergreen oil (the taste is less than thrilling without it).

Super Formulas has more than 360 formulas, 114 8-1/2 x 11 inch pages and a soft (but washable) cover.

Super Formulas is available from Valley Hills Press, 8 Valley Hills Dept RE, Starkville, MS 39759, for \$14.95 postpaid in the U.S. or \$20.75 postpaid to Canada.

It is fun to read, and a wonderful resource to have. Try one.

ISBN #0-9637539-7-5

Living with Varroa

Varroa is a serious problem for beekeepers in many parts of the world, and a threat to others in countries which this parasite has not yet reached. Even beekeepers using an effective chemical control need to look

ahead to when that compound might become ineffective or unavailable.

The advent of varroa must be matched by beekeepers becoming better informed: there is no long-term 'quick fix' solution for the industry to rely on.

Living with Varroa is one response to this need from the International Bee Research Association. Based on the proceedings of a symposium held in London in November 1992, it gives a complete overview of current research. Authors from four countries share their experiences - experiences vital to understanding and controlling this parasite.

This well-illustrated, 60-page book:

- Reviews our current knowledge of varroa's biology, and how the mite damages honey bees.
- Comprehensively documents

control measures.

- Tabulates currently used chemicals.
- Gives a good description of non-chemical (biotechnical) control measures.
- Describes how beekeeping industries can respond positively to the challenges posed by varroa.

This book is essential for beekeepers who want to keep bees successfully despite the advent of varroa, and provides a useful reference for anyone involved with the subject.

Living with Varroa, (1993), edited by Andrew Matheson. price (including post and packing) \$US28. Available from the International Bee Research Association, 18 North Road, Cardiff CF1 3DY, UK. FAX (0222) 665522 (national) or (+44) 222-665522 (international).

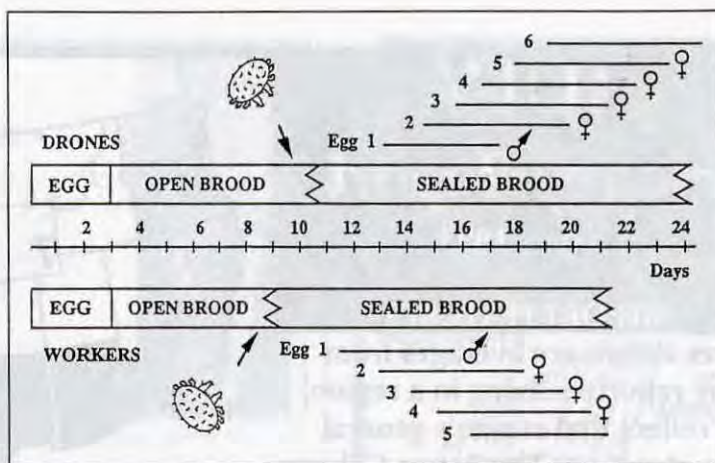
The price is \$179.95 U.S. For more information contact: Bell's Apiaries, 12168 Old Frederick Road, Thurmont, Maryland 21788 (301) 898-7233 or 1-800-477-2331.

NEW PRODUCT

The **Super Hive Mobile** is a unique device designed to allow one person to easily lift and move a complete hive. It will also accept an inverted top cover holding several full honey supers, eliminating much backbreaking work carrying supers or even empty equipment around the beeyard. Using a ramp, the Super Hive Mobile can even load a pickup truck or a trailer.

The **Super Hive Mobile** is easy to position. It picks up the hive by four small feet which slip under the bottom board when the handles are pulled together alongside hive bodies. The weight of the hive, when lifted, holds the handles together. A bungee cord could be added for additional security. Banding the hives works better than hive staples in that it also secures the cover. A ventilating "front door" makes for quick work closing the hive and makes moving hives with this device quick and easy.

The Super Hive Mobile is constructed of heavy gauge steel tubing and a heavy duty wheelbarrow tire. It is capable of carrying over 300 lbs. Because it can be easily disassembled, it requires minimal space during transport. This is a heavy duty piece of equipment, constructed to last a lifetime.



Schematic view of varroa mite development. The diagram illustrates the importance of the duration of the post-capping stage for the amount of progeny produced.

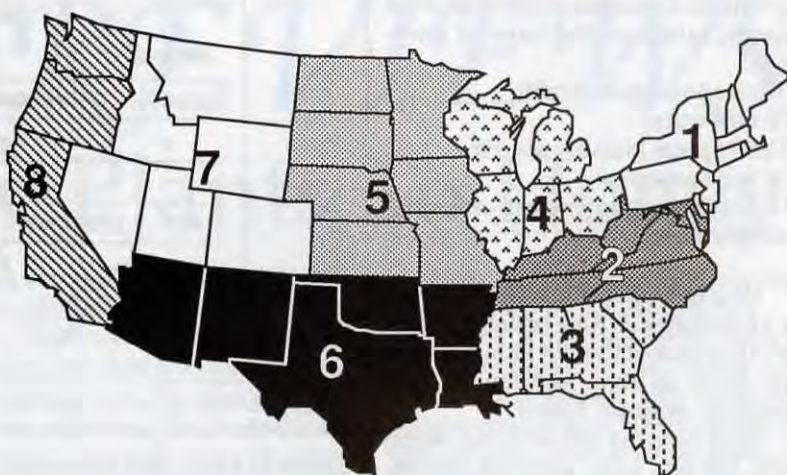


JULY Honey Report

July 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	Range	Avg.	Last Month	Last Yr.
Extracted honey sold bulk to Packers or Processors												
Wholesale Bulk												
60 #Light	44.36	46.18	42.19	40.47	37.18	40.17	43.24	40.15	30.60-54.00	41.96	46.07	42.37
60 # Amber	40.00	42.25	37.46	39.00	35.56	38.17	40.56	35.57	26.70-49.00	39.32	43.14	39.89
55 gal. Light	.650	.559	.606	.570	.550	.537	.581	.557	.48-.85	.578	.599	.614
55 gal. Amber	.578	.525	.526	.525	.534	.495	.534	.507	.45-.60	.528	.547	.549
Wholesale - Case Lots												
1/2 # 24's	21.26	22.14	18.39	18.99	17.21	19.18	20.67	23.50	16.32-25.00	20.28	20.73	21.26
1 # 24's	29.46	29.78	28.32	30.33	29.04	29.65	29.84	27.55	25.00-35.00	29.33	30.34	30.31
2 # 12's	27.19	27.17	26.06	28.27	26.28	25.93	27.65	26.45	26.00-31.20	26.91	28.50	27.42
12 oz. Bears 24's	26.13	26.04	27.52	25.33	22.08	25.50	26.17	25.60	22.10-35.00	25.45	26.66	27.92
5 # 6's	29.01	26.90	28.96	31.02	29.00	27.33	28.88	27.35	24.90-33.45	28.53	31.21	31.10
Retail Honey Prices												
1/2 #	1.19	1.32	1.20	1.12	.94	1.12	1.15	1.12	.89-1.79	1.15	1.18	1.18
12 oz. Plastic	1.48	1.63	1.76	1.50	1.39	1.41	1.53	1.69	1.24-2.00	1.51	1.53	1.55
1 #	1.66	1.93	1.59	1.89	1.72	1.68	1.78	1.82	1.17-2.23	1.76	1.78	1.77
2 #	3.12	3.05	3.08	3.06	2.79	2.92	3.22	3.39	2.39-3.75	3.03	3.14	3.11
3 #	3.93	4.42	4.41	5.01	4.08	3.94	4.31	4.59	3.50-5.69	4.32	4.33	4.35
4 #	5.51	5.20	5.38	5.49	5.32	4.91	5.29	5.28	4.25-6.99	5.25	5.43	4.74
5 #	7.28	6.37	6.00	6.63	6.23	5.95	6.50	6.14	5.50-8.75	6.45	6.45	6.75
1 # Cream	2.30	2.53	2.24	1.79	1.89	2.51	2.62	1.97	1.49-3.00	2.22	2.26	2.11
1 # Comb	2.91	2.93	2.87	3.37	2.98	3.10	3.07	2.80	2.29-3.95	2.99	2.99	2.77
Round Plastic	2.45	2.64	2.99	2.81	3.12	2.93	2.70	2.25	1.99-4.25	2.73	2.57	2.52
Wax (Light)	2.58	1.23	1.62	1.33	1.37	1.69	1.64	1.30	1.15-3.50	1.68	1.79	1.53
Wax (Dark)	1.90	1.10	1.25	1.15	1.19	1.31	1.30	1.10	1.00-1.95	1.33	1.39	1.19
Poll. Fee/Col.	35.00	20.30	32.50	32.50	30.50	24.50	30.51	28.50	22.00-40.00	30.11	29.43	28.73

Region 5

Wholesale prices slipping as loans come due and imports show up. Retail still fairly strong due to cool, wet spring keeping demand high. Colonies average condition, working somewhat late early flows. Moisture good for clover, if it ever clears up.

Region 6

Wholesale prices reflecting national picture lower. Retail prices lower, too, but probably more due to seasonal slack than anything else. Cool, wet spring slowed early crops, but mid- and late-season should do well.

Region 7

Although prices are down at both retail and wholesale, producers, optimistic as moisture, weather and early crops have been generally exceptional. Demand steady though, as tourist trade starts up.

Region 8

Southern areas a mixed bag as high moisture slowed some early flows, but pushed others to greater than ever production. Later flows should be excellent due to moisture. Northern areas mixed, too. Early call, that late warm weather has helped, but legal hassles and pesticides messing things up smartly.

MARKET SHARE

The foot print of low priced honey imports is becoming more and more apparent. Wholesale prices, (even at this seasonal low priced period), are the lowest in years. Commercial producers are selling low to settle loans, and large packers are using both. As a result retail prices are sliding, forcing smaller sellers to lower prices to compete. It appears to be a downward spiral - with no winners.

Region 1

Prices dropping pretty fast, especially in the wholesale area. Demand about the same so the market seems to not be price driven. Colonies in good shape for late spring early flows adequate due to cool weather. Maine blueberry crop exceptional.

Region 2

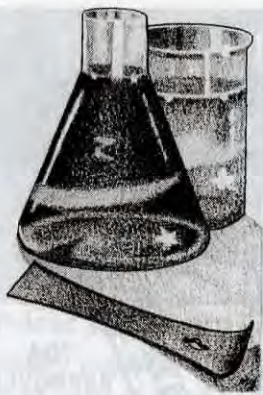
Prices steady to even increasing a bit, uncommon at this stage of the game. Colonies doing fairly well on early flows locust, clover etc. Demand for light honey increasing, which will bring up prices.

Region 3

Prices dropping in the wholesale market as loans are due and imports take up space in packers warehouses. Excellent crop of citrus honey, especially in the south, but tupelo and titi short. Colonies strong, pollination steady.

Region 4

Prices mixed as demand slowly declines and early crops get harvested in southern areas. Heavy losses this winter have beekeepers making bees, not honey, so prices should improve as shortages become apparent and local honey demand increases.



RESEARCH REVIEW

roger morse cornell university ithaca ny

"Once we get this figured out, who knows what we can accomplish."

Bumble bee colonies are widely sold in Europe, and to a lesser extent in North America, especially for the greenhouse pollination of tomatoes. However, many people have reported using honey bees successfully in greenhouse situations, especially the Japanese, who use over 60,000 small colonies of honey bees for the greenhouse pollination of strawberries alone (Matsuka and Sakai, 1989). I have not seen an economic study in which honey bees and bumble bees have been compared.

Growing bumble bee colonies has been shrouded in secrecy. There are at least four companies in Great Britain, the Netherlands and Belgium engaged in this business, as well as two in the United States and one or two in Canada. Slowly, and reading between the lines, we are beginning to understand what is being done.

I am told that two, two-day-old worker honey bees are placed with a mature, field-collected, mated queen bumble bee to help her in initial colony development. The first reference I have found suggesting that honey bees will work with bumble bees is by Dr. V. Ptacek of Czechoslovakia back in 1985. Apparently, the worker honey bees groom the bumble bee queen but it is not clear if they feed her and/or the brood. In this paper it is stated that not all bumble bee species accept the worker honey bees. I have not found any mention concerning the final fate of the honey bee workers.

In 1990, van Heemert and his colleagues wrote that four to five young honey bees are added to assist the queens. How these young honey bees

actually help the queen is yet unknown, but they probably in some way stimulate brood activity.

More recently, a 1991 paper by van den Eijnde, from the Netherlands states that the "queen is put into a small cage, together with three or four newly emerged worker honey bees to assist her." Unfortunately, there is no further information as to what "assist" means.

Free and Butler (1959) said that confining "one or two workers with each queen" stimulated brood rearing (presumably this means bumble bee workers). They wrote, "Sladen even found that confining a queen together with workers of a different species to herself induced her to lay eggs, although the workers gave her no assistance. It looks therefore, as though some psychological factor may be involved and some of Free's work tends to confirm this."

If two to five worker honey bees can encourage the development of a prosperous bumble bee colony why not use ten, twenty or more bees? One can only presume that this has been tested and failed. An answer may possibly be found in a paper by Huang and Robinson (1992) in which they show that when one to four worker honey bees are reared in isolation, they produce more of the hormone that stimulates them to age and become foragers. In other words, workers reared alone started to forage at a much younger age. Also, their ovaries did not develop as might happen when small groups of bees are reared without a queen. When more than five worker honey bees are reared together their hormonal development is the same as when they are in large colonies.

What is needed now are observa-

tions on the behavior of small numbers of worker honey bees when they are confined with a bumble bee queen. However, what is especially interesting is that different species (bumble bees and honey bees) can be reared together and apparently the honey bees stimulate bumble bee reproduction. What are the controlling factors—hormones, pheromones or what? I suggest that some of these findings will open new doors in bee research, especially in regard to the structure of social insect colonies. □

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? DO YOU KNOW ?

All About Crop Pollination

clarence collison

Numerous crops throughout the United States rely on honey bees and various species of wild, native bees for pollination. Many commercial beekeepers move and rent honey bee colonies to growers to meet this pollination need. Not only does the renting of honey bee colonies serve as a form of crop insurance in years when wild bee populations are not adequate or foraging conditions are

marginal, it also provides the beekeeper additional income. How familiar are you with the crops that require bee pollination and the proper management practices for both honey bees and various species of wild bees that are often used to provide pollination services? Please take a few minutes and answer the following questions to find out how well you understand these important topics.

The first ten 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 bee colonies are typically rented for apple, pear and peach pollination.
2. ___ Strong overwintered colonies are superior to packages for early spring pollination.
3. ___ Apples, tart cherries, almonds, and blueberries require cross-varietal pollination.
4. ___ Honey bee colonies rented for pear pollination are normally moved into the orchard at the start of bloom.
5. ___ Varieties of strawberries with short stamens and tall receptacles benefit the greatest from bee pollination.
6. ___ Leaf-cutter bees and alkali bees are considered better pollinators of alfalfa than honey bees.
7. ___ Alkali bees and leaf-cutter bees nest in the soil.
8. ___ Cucumbers require bees for pollination because the pollen is dense and sticky and the flower sexes are separate.
9. ___ Insect visits including bees are required in the production of carrot, onion, and cabbage seed.
10. ___ Plants which are not self-fertile and self-pollinating need to receive pollen from flowers on other plants of the same species.

Multiple Choice Questions (1 point each).

11. ___ The state renting the greatest number of honey bee colonies for pollination each year is:
A) California
B) Florida
C) New York
D) Maine
E) Michigan
12. ___ The crop requiring the highest number of rental honey bee colonies in the United States is:
A) blueberries
B) oranges
C) apples
D) almonds
E) alfalfa Seed

13. ___ The _____ flower must be tripped (release of the sexual column) in order to achieve pollination.
A) onion
B) plum
C) alfalfa
D) watermelon
(E) grapefruit
14. What are two disadvantages of having colonies of honey bees sitting at the edge of an orchard year-round? (2 points)
15. Why are bumble bees considered to be better pollinators of red clover and blueberries than honey bees? (1 point)
16. What are the expected outcomes when a crop receives inadequate or poor pollination? (3 points)
17. What is the basic limitation when pollination recommendations ask for a specific number of colonies per acre? (1 point)
18. Plants that are wind pollinated tend to have small, inconspicuous flowers that are single sexed. What characteristics would you associate with insect pollinated flowers? (3 points)
19. Bees are considered to be the primary pollinators of many flowering plants. Name two other groups of insects that are responsible for pollination. (2 points)

ANSWERS ON PAGE 396

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FALL REQUEENING

richard bonney

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Do you requeen your colonies regularly, or do you let the bees do it? Do you remain in control, or do you leave things to chance? Is the new queen one of your own choosing, from a reliable and proven source, or was she raised by the bees under uncertain and perhaps unsettled conditions? Supersede and swarming happen regularly and naturally but they do not necessarily lead to a rosy future for the colony. The bees are not omniscient. They cannot foresee the future and do not plan ahead – they react to the stimuli of the moment. If the bees requeen, you may never know it happened. However, if you do the requeening, you know what is going on. You even can control the future in a sense because you know about that new queen's breeding and you can track her age as time passes.

Do we really need to butt in? In spite of the potential problems, bees succeeded long before the advent of beekeepers, requeening on their own terms and in their own time. One school of thought says we should let them continue to do so. The bees can recognize a faulty queen and they will replace her – eventually. The disadvantages of letting the bees do it, though, can be major. How they go about it, plus the nectar flows, weather, drone availability and quality, and general colony conditions all can affect the quality of the resulting queen – and her offspring. Each of these variables is important. Keep in mind that nature's goal is to have the colony to survive and reproduce. Your goal is for the colony survive while producing a substantial amount of surplus honey.

We must keep in mind that our bees are only a short step from being

feral. That step is measured in terms of beekeeper intervention and care, and not in terms of the bees' activities and behavior. Remember what happens to bees in nature. A significant number of feral colonies die off regularly. That is why bees swarm – to replace the losses. We tend to think of bee colonies as living forever (or at least we used to!). I don't know if anyone has done a study on this, but a feral colony probably has a relatively short life. We see bee trees where there is apparent activity year after year after year. Close observation might show a continuing cycle of natural die-off and subsequent replacement by swarming. Not every year, but more frequently than we might expect. If you know of a bee tree, regular observation over a period of time could prove very interesting and revealing. How long does the particular colony live?

There always will be beekeepers who prefer to let the bees do it themselves. If your thinking is in that

direction, consider some of the variables mentioned above, and how they affect activities in the hive – population and general conditions, for instance. The colony must have the right number of bees and the right balance of ages in the population, first to recognize the need for a new queen and then to be able to do something about it. Young bees are important. They are the ones who recognize and interpret the status of the queen, and who actually undertake the queen rearing, once they recognize a need. If young bees are in short supply, there may be a delay in recognizing that need, and the actual queen rearing may proceed with little enthusiasm. The resulting queen may not be top notch. All queens are not created equal.

Nectar flows are also a factor. A decent nectar flow is a stimulus to bee activity. A poor flow may not inhibit routine activities totally but it can reduce the enthusiasm. Queen rearing needs enthusiasm.

Continued on Next Page



A colony that lags behind the rest as the season progresses is a strong candidate for requeening in the late summer. Analyze it carefully.

Nature's goal is to have the colony survive. Yours is to have it produce surplus honey. These are very different goals.

Then, we have the weather. The bees can raise that new queen and escort her to the door, so to speak, but if the weather does not allow, she cannot make her orientation and mating flights. A day or two delay is not important, but prolonged periods of poor weather can have adverse effects. If flights are curtailed, our new queen might not mate with the optimum number of drones, running out of sperm later at an inopportune time. In the worst case she might never mate, becoming a drone layer. And aside from affecting flights, adverse weather inhibits that all-important nectar flow.

When the virgin queen is ready, drones must be out there, ready and waiting. These drones are not the responsibility of the queen's colony. She will fly out to a drone congregation area to meet boys from all over the neighborhood. We can never be sure who or how many nor do we know their breeding. Natural mating always has an element of chance. (Queen breeders depend on natural mating, but they usually make an effort to saturate the neighborhood with drones of their choice.)

There is also an element of risk as the queen flies out on those mating flights. She might not make it back.

The depredations of birds, for instance, or simply getting lost, cannot be ignored.

So far we have been talking in general terms about the beekeeper staying in control. We can assume that this will give us a better queen. Other reasons exist as well. Regular requeening is the only way that you can maintain a particular race or line. Perhaps you have a colony headed by a Buckfast queen, or maybe a Carniolan. That queen will not live forever, and you can reasonably expect the colony to replace her someday through swarming or supercedure. You can also expect that the new queen will not mate with Buckfast or Carniolan drones. The large, large majority of drones in this country are of Italian lineage. That means your new queen's offspring will be hybrids and your line will be lost.

A further consideration is the Africanized bee, a still largely unknown quantity for most of us. As these bees continue to spread, more and more of us will be at risk. A regular program of requeening with a marked queen can help protect



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against Africanization. As long as the marked queen that you introduced is still evident, you know that Africanized bees have not taken over your hive. If she disappears, that may be a signal to take preventive action — requeening again. Regular requeening of all colonies using marked queens of known breeding could become a requirement someday.

A final thought here — it has been well demonstrated that the presence of a young queen is a strong factor in swarm control. Not the only factor, but with swarm control, everything helps.

When do we do routine requeening? There are two main schools of thought — spring and fall. I like the fall myself. This gives me time to look over my hives, determine the needs, and do the actual requeening in a more leisurely manner. Actually I do it in August. Requeening in September or October is late and does not leave time for recovery in case of problems, nor does it leave time for the colony to adjust.

One of the advantages often cited for spring requeening is that hive population is down and the old queen is easier to find. If you look at a graph of hive population, you will see that the total population in May differs little from that in August. Further, in August the population is usually spread out more since supers are in place to give more room, and with brood rearing now on a seasonal downtrend, the number of frames with brood is slightly smaller, reducing the number of frames where the queen might be found.

Of course, those extra supers must be handled, a slight inconvenience,

By this time of year you have had an opportunity to judge your queen. If she's not up to par, now is the time to replace her.

and, depending on your specific location, perhaps you don't have much of a nectar flow in August. Colonies are usually easier to requeen during a good nectar flow.

However, with a good part of the season already past, you will have had an opportunity to judge your queen. Isolate her to a specific hive body so you can find her readily when the time comes, and establish a nucleus hive, a nuc, as your requeening medium. I like to establish a small nuc in the early season, say three or four frames, and introduce a new queen to it. A small nuc with many young bees but few of the older field bees is very receptive to a new queen. This nuc can be kept in the bee yard as a resource. It can provide a frame or two of brood to a needy hive, or even give up its queen if an emergency arises. Later, assuming the nuc is still intact, it is a painless way to requeen that colony we have been talking about. First remove the old queen from the colony to be requeened. Then, remove several frames from that colony to make room, rearrange frames as necessary, and insert the nuc in or adjacent to the existing brood area. The frames and bees of the nuc will buffer the

new queen against the original colony until all have acquired the appropriate odor and settled down as one big happy family.

I have found surprisingly little conflict between the colony and the nuc. Judicious smoking helps as the nuc is being inserted but in my experience they just don't fight, especially if a nectar flow is on and the field bees are preoccupied. Remember, we are placing the nuc in or near the brood area, the domain of the young receptive house bees.

Many other methods of replacing the old queen exist. In the absence of a nuc, I have had success with a basic approach. I first remove the old queen. This step is essential, yet some beekeepers don't do it and introduce the new queen in the presence of the old. This is a waste of a new queen. The colony knows itself to be queenright and will have nothing to do with the new one. If she is released directly into the hive, she almost certainly will be killed by the workers. If she is introduced in a queen cage, she will be ignored, probably dying in her cage.

Of course, finding the old queen can be a problem. If you anticipate difficulty finding her, use a queen

Continued on Next Page



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A three or four frame nuc set up in the early season is an ongoing resource. In late summer it can be used to requeen a needy colony.

FALL REQUEENING ... Cont. From Pg. 367

excluder. Assuming your hive has two hive bodies, place the excluder between them a few days ahead of the scheduled requeening. Then, when you look for the old queen you need only search the hive body containing eggs. Assuming the hive has not been unduly stirred up or excessively smoked, the only place you need look is in the brood area. The queen has no

reason to leave the brood nest in the normal course of events.

Once the old queen has been found and removed, the new queen in her cage can be placed on top of or between the frames of the brood area, right down in there with those young house bees. They will hasten to release and welcome her.

There are many variations to the

actual technique of requeening. Dousing the new queen with syrup, delaying the installation for a day or two after removing the old queen, crushing the old queen on the new queen's cage - each of these has adherents. I prefer to keep it simple and usually my method works. It's always good to have some extra time, just in case, so do it earlier than later. ◊

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Laying Workers

A PRIMER

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There are two female castes in honey bees – queens and workers. Drones are not a caste, they are males. Queens may very well be called super females while workers are undersized females. Neither could be considered a normal insect.

The queen lays all of the eggs in a colony. Equally important, she secretes chemicals (pheromones) that inform the workers she is present. These pheromones also inhibit ovary development in worker bees and prevent them from laying eggs. Worker bees have no sex attractant and are too small to mate, in fact, they never attempt to do so.

Usually, if a colony loses its queen, the workers start to raise a new queen using a one-day-old worker larva. If a beekeeper splits a colony the bees will also grow a new queen in the half left queenless. This procedure usually works quite well and the colony becomes queenright in a short period of time. It is a great curiosity, and little studied fact, that queen cells will inhibit the growth of worker bee ovaries just as a live queen will.

However, if a queenless colony fails to raise a new queen, the ovaries in a small percentage of the bees will develop and after about 14 days these workers will lay eggs. We call these bees laying workers. Usu-

ally only 10 to 15 percent of the worker bees in a colony become laying workers. Their eggs either fail to develop or produce drones. Without intervention laying worker colonies eventually die since the worker population is not replaced.

Ovaries and ovarioles

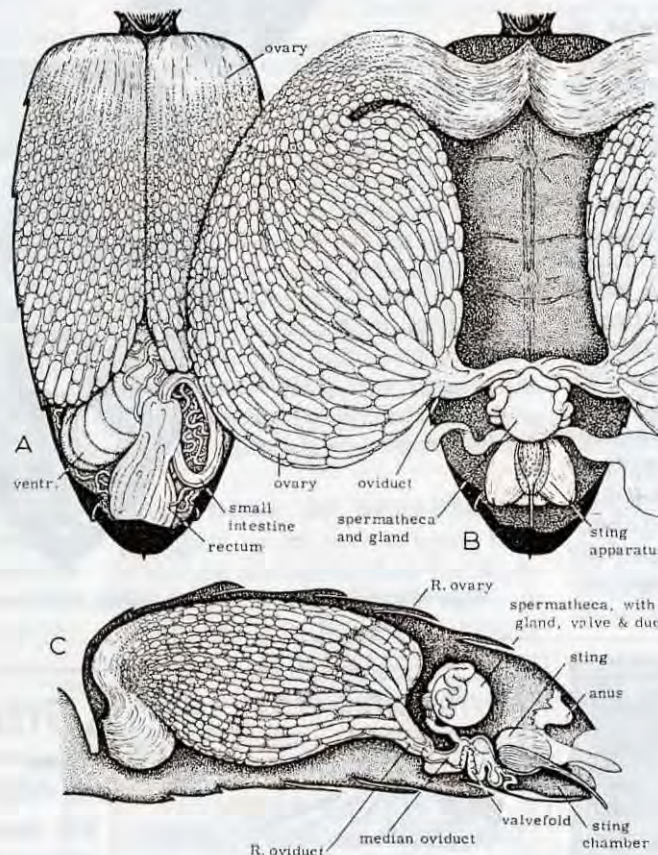
Both queens and workers have two ovaries each. In the queen an ovary is pear-shaped and consists of 100 to 200 long tubes, called ovarioles. Eggs start to form in the small tip of an ovariole and they increase in size as they move down the tube. Mature eggs move from an ovariole into one of the two oviducts and then into the vagina. Sperm, as it is needed, moves from the spermatheca, where it is stored, into the vagina where it enters an egg. If an egg is fertilized it may develop into a worker or a queen. If it is not fertilized it develops into a male.

In worker bees there are usually two to four, and rarely more ovarioles in each ovary. A small knob-like, non-functional spermatheca lies on top of the vagina. Presumably queen honey bees can produce up to 1500 eggs per day but laying workers produce no more than 10 to 30, though the number varies and there are differences between races of honey bees.

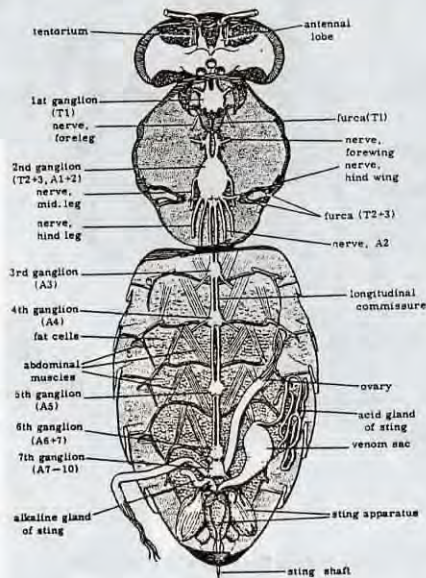
The sound

When a colony goes queenless the workers exhibit several

Continued on Next Page



Inside a fertile queen. A, Stage 1, viscera undisturbed. B, ovaries laid out and alimentary canal removed. C, longitudinal 'semisection' right side, viewed from the left. (From Dade)



Dissection of worker. Head canted back to show some parts more clearly, glands removed; alimentary canal removed to expose nervous system, sting apparatus, and floor of abdomen. (From Dade)

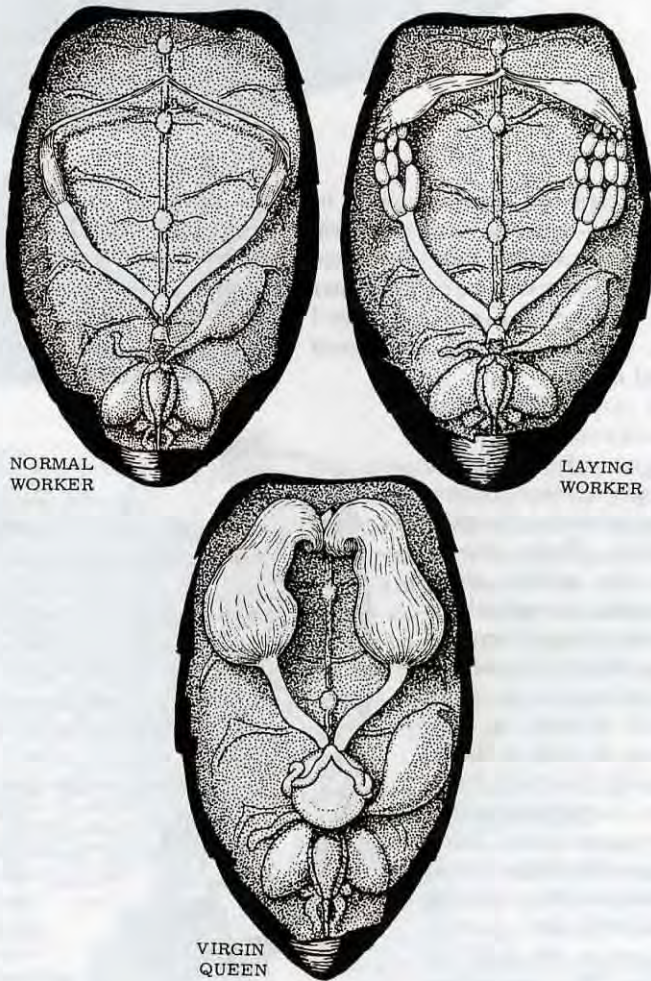
LAYING ... Cont. From Pg. 369

different behaviors. One of these, often noticed even by beginning beekeepers, is the 'sound' of a queenless colony. A large number of worker bees in a queenless or laying worker colony expose their scent glands and wing-fan soon after their colony is opened. The sound (roar) that is heard is different from that which comes from a queenright colony. A small number of bees in an opened queenright colony may wing-fan but most continue their normal activities. Thus the sound made by the bees is a reasonably good diagnostic tool in determining if laying workers are present. However, this is not an infallible rule and you should check for laying worker eggs. The colony may simply be queenless, and salvageable.

The deposit

In a colony with laying workers there is one sure diagnostic key to look for. You will notice several eggs in one cell. Laying workers do not discriminate, and more than one worker will deposit an egg in a cell. These eggs are rarely centered in the bottoms of the cells, but they may be, or you may see them attached to the sides of cells. Laying worker eggs are usually smaller than those deposited

by a queen. It has been observed that a normal queen in a congested colony, or in a colony that has too few bees, may deposit more than one egg per cell but rarely more than two are seen. Even when a queen lays more than one egg in a cell the eggs are normal size and deposited on the bottom of the cell. If you find many eggs in a cell it is almost certain laying workers are present.



Reproductive organs of normal, laying worker, and virgin queen. (From Dade)

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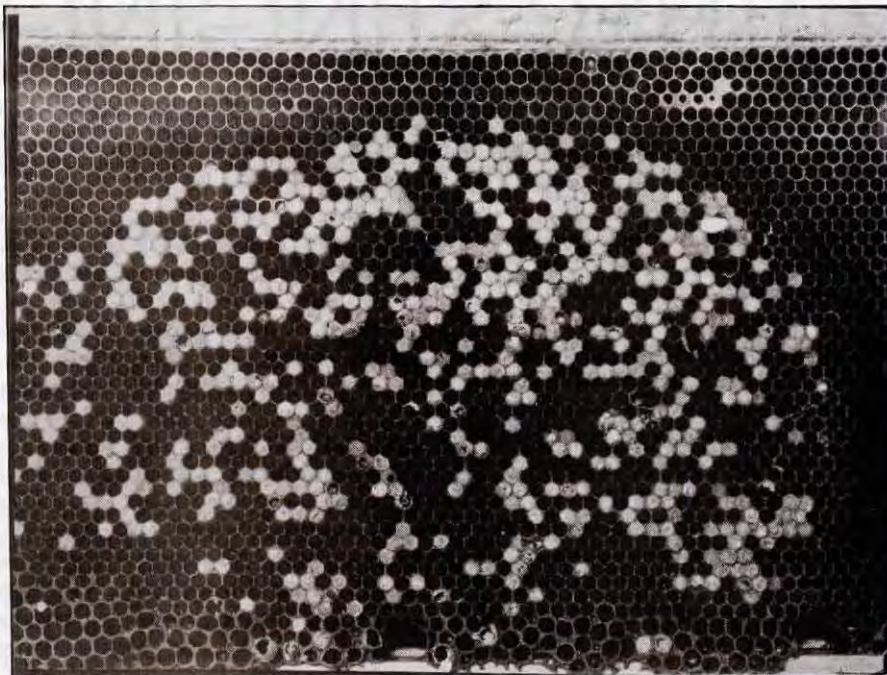
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Can they be requeened?

Most beekeepers agree it is almost impossible to requeen a laying worker colony. The laying workers assume a queenlike relationship with the rest of the bees and any introduced queen is killed. And, since finding a laying worker is nearly impossible, making a split and introducing a queen there is usually as futile as requeening a colony. When a laying worker colony is found the best thing to do is to take the hive to the edge of the apiary and shake the bees onto the ground. Many of the laying workers will be lost and die. The remaining bees presumably drift into other colonies where they apparently cause no problems.

Queen cells

One often finds one to several queen cells on the sides of brood combs in a laying worker colony. These cells are in the area where eggs are being laid, not on the bottom of frames where one usually finds swarm cells. These queen cells are usually very different. Their outside surfaces are more or less smooth, not wrinkled as are normal queen cells. These cells rarely mature. If they are opened they



You can't always tell when laying workers are present by the sound. This frame could be mistaken for any number of problems. Look for multiple eggs in cells, listen for the roar, and look for a queen. If you decide the colony DOES have laying workers you need to remove the bees and restart the colony. Requeening seldom works.

will usually contain small larvae or male pupae. Rarely, a normal queen may develop parthenogenetically from a laying worker egg without its being fertilized. However, this occurs so infrequently that a beekeeper should not depend on its taking place. Because it may occur, some beekeepers suggest that bees in a laying worker colony may steal a fertilized egg from a normal colony and use it to grow a new queen. While this theory has sometimes been popular there are no data to suggest it ever takes place.

Cape bees, an exception

There are 26 races of honey bees in Europe and Africa from the Scandinavian countries in the north to South Africa in the south. One of

these, the Cape bee from the tip of South Africa, is different from the rest. Cape bee workers normally have more ovarioles, an average of about 16 in each ovary. It is not uncommon for Cape bee colonies to become queenless, develop a laying worker condition, dwindle in population, and then suddenly become queenright as a result of an egg from a laying worker developing into a normal queen. This new queen mates in the usual manner, the colony prospers and colony life continues as before. The Cape bee has not been studied thoroughly, though recently we have seen more papers about their bizarre behavior. At present, these bees are studied more for their scientific curiosity than their commercial potential. ◊

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OTHER STINGING INSECTS

WASPS • YELLOW JACKETS • HORNETS

cindy grahl

Though some beekeepers have few problems with stinging insect pests, others are plagued by wasps and yellow jackets. According to Richard Fell, associate professor of entomology and specialist in bee culture, Virginia Polytechnic Institute and State University, beekeepers' problems with wasps and yellow jackets fall into two categories. One is the standard type of human-habitat problem seen by any landowner: insect pests in a yard or near picnic tables or garbage cans. The other problem is more specific to honey bees – common forage area problems, and honey-stealing stinging pests.

Problems

Fell notes that wasps *can* cause problems for bees when they have a mutual hunting area – when bees are foraging around ornamentals beset by aphids, whose honeydew is also attracting wasps and carpenter ants. In this case, he says, control the aphids, with insecticides or soapy water, but monitor applications to make sure they are kept within label guidelines and apply in the late afternoon or early evening after foraging ceases and no new honeydew is being excreted. It's a tough problem to solve, he comments.

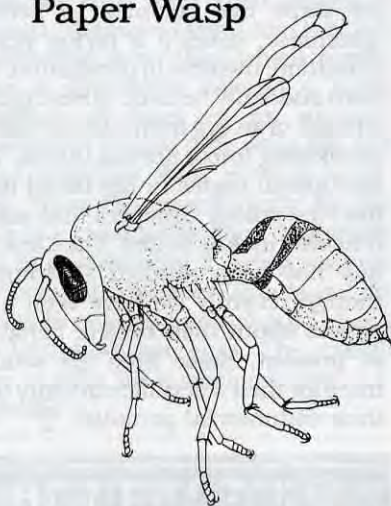
Another big wasp-produced concern for beekeepers, notes Fell, is

when people see insects foraging around ripened fruits such as grapes and, assuming a “bee problem,” look for a way to destroy nearby bees. Fell notes that the bees are just taking advantage of wasp activity. The wasps can cut through the fruit skins, thus paving the way for bees, who cannot penetrate the skin, so in actuality this is a “wasp problem”

It means wasps are in the vicinity and to control the problem the nest must be destroyed. Merely spraying the fruit is not an effective solution, as wasps just cut holes in the skin and eat the pulp. They are not affected by the toxins.

By far the beekeepers' biggest

Paper Wasp



Yellow Jacket



Bald-Faced Hornet



All the following pests are of the family *Vespidae* and all have queens which overwinter as adults to start new nests each spring. Nests remain active for as long as six months, and old nests are usually not reused.

Paper wasps, *polistes*, are not a big problem to beekeepers, as they are usually non-aggressive but protective of their nests. They have red or dark brown coloring with long legs which hang down during flights.

Yellow jackets, *vespula*, though small, compensate by being the most aggressive of all social insects. They frequently come in contact with humans because they

nest in structures and forage around garbage cans and picnic areas for protein and sugar. Five species are foragers in the U.S., but there is no common bait which attracts all five. The eastern species are especially indifferent to bait. These pests are banded in yellow and black with yellow and black abdomens, have hardly any hair on their bodies and lack pollen sacks, which differentiate them from honey bees.

Bald-faced “hornets”, *D. maculata*, are actually yellow jackets but are known by their white and black body markings. Their behavior is equally aggressive.

problem with stinging pests is yellow jackets. They may invade a hive, steal honey and even attack the brood. It's a difficult situation, according to Fell. Beekeepers can fight it by reducing the entrance to a weak hive, thus making it easier for the bees to protect against the intruders.

William Conley, a bee inspector for the Ohio Department of Agriculture, says though he's seen no problems with wasps and bees, yellow jackets *can* take over a hive in the quest for food. He's actually seen one hive destroyed this way, and notes that the problem may be on the rise because of increasing varieties of yellow jackets.

Fortunately, says Tom Bradley, technical services and development specialist at Whitmire Research, a major pesticide manufacturer, it is rare to see problems for honey bees caused by paper wasps, as the wasps are normally found in or near structures, not near hive areas.



Nests made of paper that hang in trees or bushes or eaves are populated by yellow jackets or 'hornets'. They resemble over-inflated footballs. Don't throw stones at them.

Control

General spraying is not recommended for wasp problems that might affect bees, say all the experts. Instead, start with non-chemical controls. These include removing nesting habitats, such as stumps, dead limbs, and hollow trees. Keep dumpsters and garbage cans clean and closed and away from traffic areas. Keep doors and windows screened.

Dichlorovos can be placed under the receptacle lid to repel insects of all kinds.

Conley recommends beekeepers with wasp problems talk with landowners to eliminate or spray habitats such as wood piles. He adds straight rows of logs are far less likely to attract pests than loose, random piles.

Fell suggests moving beehives before spraying wasps. If this is not possible, the hives can be covered with burlap and wetted heavily throughout the day. This will keep the bees inside, while frequent watering, combined with a loose burlap wrap, will keep bees from overheating. This may not be possible, however, due to distance from water or other reasons. An easier way to keep bees inside, and to protect them during a spray is to simply screen the entrance at night, and place a moving screen on top. This provides more than adequate ventilation so the hive doesn't overheat, while keeping all the bees at home. Generally, bees can be released the evening after the general spraying is complete.

To avoid general spraying, use hanging traps near problem areas, at a recommended two traps per acre. Bait yellow jacket traps with fish, ham or jelly. Unfortunately, no bait attracts all five species of foraging yellow jackets, and some may even be repellent, and baits may have to compete with other food sources such as picnics and garbage, so sanitation must be strict. The good news is that baits are target-specific and reduce the amount of pesticide needed.

According to Richard Kramer, technical director of the National Pest Control Association, it can be tough to find an appropriate pesticide for general spray use. Products recommended for use on pest insects such as carbamate-based compounds, can be equally or even more destructive to honey bees, since they are very sensitive to these chemicals. That is because the honey bee lacks a certain detoxification mechanism. They are not quite as sensitive to organophosphates, he notes. Most experts agree though, it is better to try source reduction by locating and destroying nests.

Seek & Destroy - With Caution

Wasps forage within 300 feet of

their nests, a clue as to where to look. Paper wasps have small nests containing about 250 individuals and consist of a single comb that looks like an open umbrella suspended from the underside of a limb, eave or ledge. Yellow jackets, however, have large nests of chewed wood or plant fiber, and are found in attics, trees, shrubs, eaves, and holes in the ground, and contain up to 10,000 workers. They can forage from 1,000 to 2,000 feet from the nest but may have flown several miles from their colonies. Bald-faced "hornets" build a round, gray aerial nest up to 18 inches across that looks like a large, over-inflated football. It can contain up to 700 individuals.

To destroy these nests, says Fell, use a dust formulation such as Ficam or Sevin in the entrance of the nest, especially in the ground nests of yellow jackets. This will be a target-specific usage that safeguards honey bees. With aerial nests, he adds, use a commercial liquid spray at night, after foraging activity has ceased, and aim at the entrance.

When taking a nest wear appropriate clothing - thick coveralls, gloves and a veil. Study the job site before treating, to plan an escape route if necessary. Don't shine a flashlight on the nest or cast a shadow on it, and don't wear scented cologne or shaving lotion while doing the job. Flashlights can be covered with red cellophane to reduce attracting insects with light.

Dan Mayer, an entomologist at the Washington State University's cooperative extension service, warns that beekeepers with major wasp problems should turn them over to professional pest control operators, just as PCOs should turn to honey bee specialists when troubled by these insects on the job. Use of pesticides on property other than his or her own could bring the applicator into violation with the law in some states, such as Washington. He also notes that several states have pesticide laws that protect honey bees, and that professional applicators must be aware of these.

A further caution: to safeguard bees from general applications of insecticides, says Fell, choose those materials with a low toxicity to bees and apply in the early evening or even later in the evening. ☺

LOSING LOOSESTRIFE

kim flottum

This is a quiz. Do you know the answers to these three short questions?

1. What state enemy wasn't present for the signing of the constitution, but today holds hostage parts of at least 36 of the 48 contiguous states (and every Province of Canada)?
2. What foreign invader has a foothold in all major drainage basins in the U.S. except Colorado's Rio Grande and the Arkansas river (so far)?
3. Finally, at nearly 400,000 acres *per year*, what tall, purple honey plant is spreading faster than spilled honey across a kitchen floor at midnight, costing an estimated \$45 million/year?

Pretty easy, right? Unless you've been living on a deserted pacific island for the last 200 years, every beekeeper worth his or her honey has heard of purple loosestrife (*Lythrum salicaria* for you naturalists).

But depending on your point of view this wetlands tenant - which includes marshes and wet prairies, roadside and irrigation ditches, river banks and lake shores, coastal acres, reservoir edges and even home gardens - produces either a monoculture of death or an incredible source of honey - carefully disguised as a soft and purple haze on summer's horizon.

Purple loosestrife gets its scientific name, *Lythrum salicaria*,



from two sources. *Lythrum* comes from Nero's army medical corps, which appreciated either the reddish-purple color - similar to blood - or its styptic properties when applied to wounds - *Lythrum* has to do with blood. The second, *salicaria* comes from its willow-like leaves - Salicaceae is the willow family.

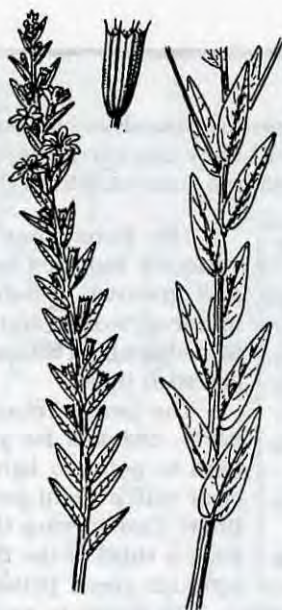
It is native to Eurasia, but today extends from Great Britain to central Russia and from Italy north to central Sweden. In Asia it inhabits the main islands of Japan, extends into Manchuria and China, then heads southeast to northern India. Loosestrife is also in parts of northern and eastern Africa, Australia, Tasmania and, of course, North America.

Purple loosestrife was first mentioned in U.S. plant literature in 1814, and probably arrived from Europe in soil used as ship ballast. By 1830 it was well established along the New England seaboard. The extensive use of canal and river traffic during the mid-to late-1800's helped loosestrife spread all over the New England area and parts east.

It was recognized early on as beneficial to beekeepers, and an attractive addition to home gardens. Both uses have also increased its spread because beekeepers harvested seeds from wild areas and transplanted them closer to home, and their bees.

Frank Pellet, in 1920, suggested that "because it confines itself largely to wet areas, it is not likely to be any more nuisance than the usual course weeds growing in such situations."

Pellet's report, coupled with several accounts of tremendous honey harvests from large stands



LYTHRUM
alatum

in areas of Pennsylvania and Michigan persuaded the beekeeping community to assist the spread of loosestrife in areas further east and south. This behavior was further reinforced some 20 years later when Pellet, in 1944, published this account.

"Favorable reports from localities where it is common seem to make it worthwhile for beekeepers to scatter [loosestrife] seed in suitable places in an effort to extend the pasture from this source."

But reports of problems caused by loosestrife were already surfacing, and it was apparent that the phenomenal spread of this innocent looking wetlands resident was due to more than beekeepers looking for honey.

In fact, loosestrife is incredibly prolific and one recent report documents just how fast it can spread. In a wildlife refuge in New York, in 1959, the first few plants were noticed. Eight years later 200 acres were completely occupied by the plant. After another 12 years fully a thousand acres had been taken over.

And it's no wonder. A single stalk (a typical mature plant has 20-30 stalks, or branches) can produce 300,000 seeds and in a pure stand there can be upwards to 80,000 stalks per acre. That's 24 billion seeds per acre produced annually. The potential for a 1000 acre stand boggles the mind. And, the spread of this plant involves even more than just bushels of seeds.

Once dropped, seeds can remain

viable under water for as long as 20 months. Those that fall on semi-dry soil sprout rapidly and grow. But tiny seedlings are often picked up and carried away by rising water, or storm currents, rooting downstream where they are eventually deposited. Moreover, stems that are knocked down sprout roots and new plants at each node (where leaves emerge from the stem), further increasing the population. And, to add insult to injury, each plant sends up new plants from the roots, increasing the density of the stand yet more.

THE EFFECT

When purple loosestrife becomes established in an area several significant changes occur that are, for the most part, environmentally disastrous.

It chokes out and soon eliminates the existing natural flora and the wildlife that once coexisted. So far, in New England an endemic bulrush, the dwarf spike rush and the bog turtle have completely disappeared because of habitat loss due to loosestrife. A good example is the result of the invasion in the wildlife refuge mentioned earlier. Measurements were taken in two areas of equal size - one where loosestrife was firmly established, the other where natural vegetation still held its ground. The result was predictable.

In the still-natural area 23 muskrat homes were found, along with 45 muskrat feed piles. Thirty-five wren nests were located, but surprisingly, only four redwing blackbird nests.

The loosestrife area was by comparison - barren. Only four muskrat dwellings were located, along with four feed piles. No wrens were found. But 21 redwing blackbird nests were located. This was soon explained in that nest predators routinely sought their prey in the natural environment, where they could easily find the nests. Blackbirds could better hide in the loosestrife and were quick to learn the advantage. Though seemingly a positive aspect, the ramifications of an increased and unbalanced bird population have not been measured.

As far as agriculture is concerned, the picture is no better. When stands of loosestrife become established, wetland pastures and wild hay meadows become useless. Loosestrife makes poor livestock feed and is difficult to mow. Irrigation ditches prob-



LYTHRUM
salicaria

ably fare the worst, becoming completely clogged thus reducing water flow and greatly increasing management costs.

Additionally, loosestrife stands reduce fresh water real estate values and make useless areas once used for hunting and recreation. These losses - agriculture, tourism and increased management - account for the (at least) \$45 million loosestrife is costing the country annually.

WHAT TO DO

For those affected, controlling loosestrife - eradication of existing stands or preventing new ones - is a seemingly impossible task.

Small stands, those two or three years old or less, can be removed by digging and removing. But any remaining root or shoot pieces can restart the process, so repeat cleanup trips are usually required. After two or three years, small stands can be eliminated.

For larger stands, experts recommend routine spot treatments with herbicides at the beginning of flowering and simultaneously removing all flowering heads.

When spraying, they say, only the tops of the plants should be covered so any natural vegetation underneath can grow up through the dying plants. Incidentally, there are at least two herbicides registered for loosestrife, both with the same active ingredient - glyphosate, made by Monsanto. Roundup®, is used on dry

Continued on Page 377

Besides its more noted attributes, purple loosestrife has an aptly named floral arrangement - Trimorphic. There are three flower sizes common to loosestrife, but any single plant has only one size flower.

The long-styled flower has one ring of short and one ring of medium length stamens; the mid-styled flower has one ring of long and one ring of short stamens; and the short-styled flower has one ring of long and one ring of medium length stamens (see figure).

Each flower type also produces a different size pollen grain. From small to large, pollen grains are 20, 24 and 30 micrometers. Interestingly, the long-styled flower has green pollen, while the other two have yellow to yellowish/tan pollen. Each flower produces pollen receptive to only similar sized flowers, ensuring adequate pollination, and continued trimorphism (see diagram).

Flowers are pollinated by a variety of insects, including leaf cutter bees, carpenter bees, bumble bees, cabbage and sulphur butterflies, and of course honey bees. Loosestrife offers an ample reward to its visitors. Besides the aforementioned pollen (two colors, three sizes), the nectar, though not extraordinary, isn't bad by honey bee standards. The average sugar concentration of the nectar runs about 21.5%. That compares to plum - 16%; white clover - 22.5%; orange blossom - 30%; and black locust - 63%.

From a beekeeper's point of view the honey tends toward average in sugars content when compared to other common sources. (From Crane)

When full sized colonies are placed near large stands of loosestrife a substantial honey crop can be harvested, as compared to other common sources. (From Crane)

Source	Lbs/Ac
Raspberry	50-100
Milkweed	500+
Goldenrod	100-200
Dandelion	100-200
Alfalfa	200-500
Alsike Clover	100-200
Almond	0-25
Cotton	100-200
White Clover	500+
Loosestrife	200-500

The honey has been variously reported as dark and greenish, resembling motor oil, to light and clear, to medium light with a slight greenish tinge.

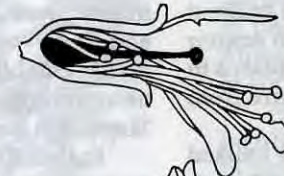
The most recent reports, checked for purity, tend to point to light and clear with a slight greenish tinge. Considering that at least a third of the flowers produce green pollen, the greenish tinge makes sense. The flavor is generally considered good, light with good flavor.

Wax drawn during a loosestrife flow is a golden yellow, a bit darker than some cappings, but a classic lemon yellow when melted down.

Source	Dextrose	Levulose	Sucrose	Maltrose
Alfalfa	33.4	39.1	2.6	6.1
Basswood	31.6	37.9	1.2	6.9
Buckwheat	29.5	35.3	0.8	7.6
White Clover	31.0	37.9	1.4	7.7
Black Locust	28.0	40.7	1.0	8.4
Sourwood	24.6	39.8	0.9	11.8
Tupelo	25.9	43.3	1.2	8.0
Loosestrife	29.9	37.7	0.6	8.1



Natural size

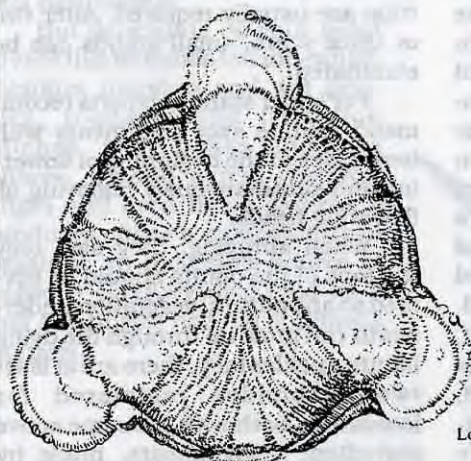


Natural size

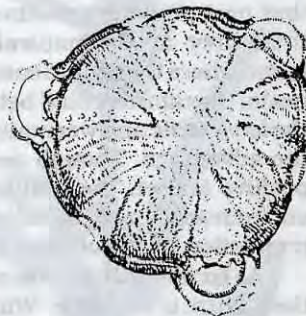


Loosestrife Flowers
Species with trimorphic flowers: a. long-styled, b. mid-style, c. short-style. X3-3.5.

Loosestrife Pollen



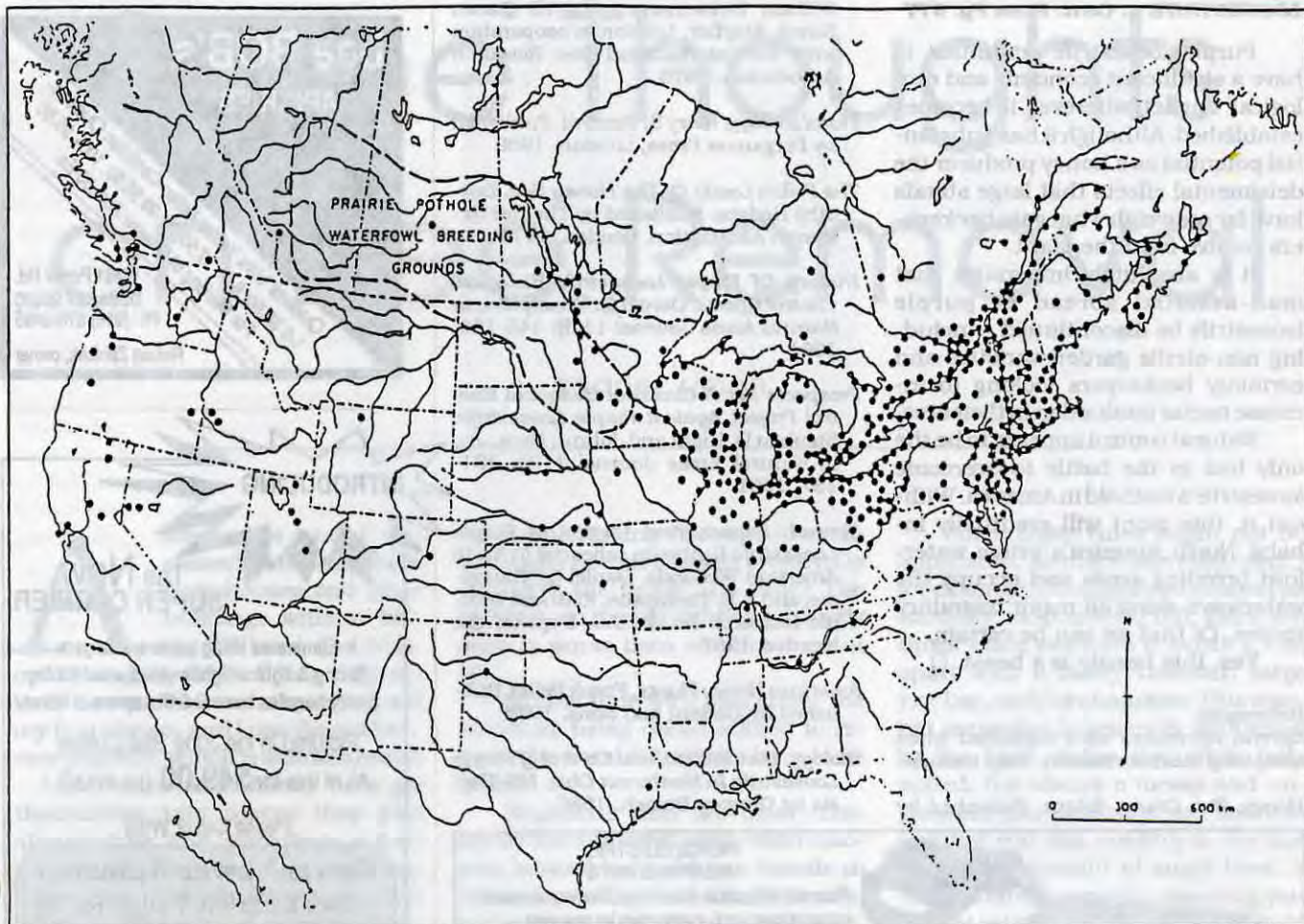
Long Stamen



Mid Stamen



Short Stamen



Distribution of *Lythrum salicaria* in North America as of 1985 (after Thompson et al. 1987).

land, and Rodeo®, is used over water. They are nonselective, systemic herbicides, fairly effective but expensive.

For large, established stands the control meisters recommend the edge treatment. By attacking from all (or most) edges the spreading activity can be slowed, and when coupled with burning, mowing and periodic flooding – the spreading activity can be slowed – but not usually stopped.

By far the most disappointing aspect of control is that there are no natural enemies. No insect, bacteria, fungus or other pest seems to enjoy or need the loosestrife plant for even occasional munching or nesting or living upon.

So in the 1980's, after extensive surveys by several government agencies, it was decided that pests and/or predators from loosestrife's original habitat should be identified, tested and introduced into North America to slow the spread of what is now considered a national problem.

NATURAL CONTROL

After exhaustive tests and trials three pests were identified as extremely effective, safe to introduce into the U.S. and able to survive the habitats in this country that loosestrife has overtaken.

One approved pest is a root weevil, *Hylobius transferovittatus*, found throughout Europe. It is very host specific. Both larva and adults tunnel through loosestrife roots to the point that 100% of the roots in a stand may be infested.

Two leaf feeding beetles, *Galerucella californiensis*, found in the northern regions of Europe, and *G. pusilla*, found in the more southerly regions, were also chosen. These beetles overwinter as adults and lay eggs on young plants. Larva mature during the season, pupate in the soil or in stems and emerge in about three weeks as adults.

Release sites were chosen that met several conditions – no standing

water May through September, four or more acres of host plants, neighboring stands of host plants nearby, no other controls in practice, little human intervention and a seven to 10 year uninterrupted test period.

The sites are monitored for insect population establishment, reduced plant population and what effect the new environment has on the pests.

This project is in its infancy to date, but previous research indicates that substantial and significant control of loosestrife can be expected. Reports from some European studies indicate that after initial infestation in previously pristine areas loosestrife populations predictably explode, but within a few seasons up to 75% of the plants are gone, and a minimal infestation is all that remains – an acceptable, and economic population.

Continued on Next Page

LOOSESTRIFE ... Cont. From Pg. 377

Purple loosestrife continues to have a significant economic and ecological impact wherever it becomes established. Although it has substantial potential as a honey producer the detrimental effects that large stands have far outweigh what gain beekeepers receive from the plant.

It is absolutely imperative that man-assisted spread of purple loosestrife be discontinued - including non-sterile garden varieties and certainly beekeepers looking to increase nectar production in their area.

Natural control appears to be the only tool in the battle to overcome loosestrife's foothold in America. Without it, this plant will eventually inhabit North America's prime waterfowl breeding areas and occupy the waterways along all major migratory routes. Of that we can be certain.

Yes, this beauty is a beast. ☐

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Some Thoughts on Bee Removal

charles simon

A few issues back I discussed removing bees from houses and other buildings without killing the bees, and without damaging the building they are in. Those removal techniques are still my first choice, and I use them whenever possible, which is almost always.

But sometimes honey bees get themselves into places they just shouldn't be. And, sometimes, even if you could trap them out and keep them alive, the situation just won't allow it. There isn't enough time; they're causing serious problems; the owner wants them out, NOW, and that's it; or for a variety of other reasons.

When this occurs, the structure has to be dismantled to some degree and the bees removed, often they must be killed. After all, sometimes honey bees are pests, and as such, treated like pests.

Before you begin a project like this you need to establish a few ground rules with the owner.

- Who will do the repair work when you are done?
- How much will this cost? How do you charge for the job – by the hour, the job, etc?
- What happens if something major occurs – like a wall collapses? Or you break Auntie Em's favorite tea cup while pounding on a stucco wall? Do you have insurance to cover this, or other equally nasty incidents?

And, you need to ask yourself a few questions before you begin. Too often beginners get in over their heads

when undertaking what turned out to be a major deconstruction project. Do you have the tools? The time? The ability to do the job right? A job badly done is worse than one not done at all.

So this time we'll talk about the structure being disassembled to remove the bees. Often they have to be killed.

Situations that are most commonly encountered range from colonies located behind loose boards in unused and dilapidated sheds to colonies securely ensconced in well-built, even new structures, impossible or cost-prohibitive to disassemble. Usually it's somewhere in between.

Standard procedures are in effect – suiting up, smoking the entrance or entrances, and the like. However, buildings are not constructed like beehives (perhaps they should be) in that they are not designed to be taken apart. This means that the job usually goes against the intentions of the architecture, requiring an extra degree of skill and ingenuity – maybe even a little bravado.

Some basic rules might not be applicable. "Gently remove top cover", for example. Of course you proceed as carefully as possible, but there are times when you have to break a wall apart with a heavy hammer, large pry-bar, and/or chainsaw. This combat carpentry is generally performed in the heat of the day while fully suited. It's always a messy and unpleasant job. Basically, you break in any way you can, possibly in the face of a full onslaught of angry bees. If you're suited properly – meaning you are not getting stung, the bees should calm down fairly quickly. And you need to work quickly because any innocent bystander will be in jeopardy during the procedure.

I participated in a removal involving four large, quick-tempered and inconsolable colonies in one house which stood in a valley, the nearest neighbor being more than 50 yards away. The original intent had been to save the bees, but that proved to be impossible. They were uncooperative, and manifested behavior better attributed to Africanized bees. Working

Continued on Next Page

To access a colony in a wall means removing siding, wall boards, maybe more. Do you have the right tools, and who puts it all back together?



on one colony got the others riled up, until it seemed like every single bee was on the warpath. They attacked everything that moved and even things that didn't move – the smoker, for example. They chased the dogs. They would not permit the mail-carrier to get out of the car – effectively preventing delivery. (Rain, sleet and all that are O.K., but bees). And when the distant neighbor came out onto his porch to see what was going on, they were on him immediately, too, driving him back into his house and keeping him there.

If you're lucky, or if they're lucky, the bees can be saved.

Or they can be killed, either before or during removal. Depending on the circumstances, this can be done in several ways:

The most obvious and least preferred method is to spray insecticide into the entrance, seal it up, and return the following day to take it apart and clean it out. If the first application is not completely successful, as will often be the case, do it again. I was once called to remove a colony from a building *after* three visits from the exterminator – Bees can be as difficult to kill as they can be to keep alive.

Done this way, the colony remains will have to be disposed of thoroughly, since the combs and dead insects are contaminated. And decomposing insects smell, wax and honey melt and you have a fine mess on your hands. Rubber gloves are a must. You have to be careful how you breathe and what you touch, because it is dangerous to you. It can make you sick, or worse. The mess is transferred to garbage bags and buried. Insecticide breaks down, but you do not want to risk exposing this mess to other bees. When a colony is killed in this manner, and not removed, new bees might move in after a few weeks and carry on as though there never had been any insecticide.

I don't recommend this method but sometimes it has to be done this way.

It is preferable to use a solution of detergent in water, one cup to one gallon. The drawback to this procedure is that it has to be sprayed



If you're using a pesticide, an aerosol is best because it completely fills the cavity and leaves little residue. Follow the label instructions, and be aware of pesticide application regulations in your state.

directly on each individual insect, and it's not possible to apply the solution effectively to a colony *before* the structure has been taken apart. It will probably miss 95% of the insects, uselessly running down the wall.

Another way to kill them before taking the structure apart, though not usually practical is to plug or tape the entrances and permit the bees to die. Depending on conditions, such as how much air is available to the

A good veil, 2 beesuits, boots and a reliable vacuum are required. A double pail is used for collecting live bees. Sometimes you can save them.



colony and how much honey is stored, this can take as long as two months, maybe even more. And the operator will have to check it regularly and carefully, because the bees just might find another entrance. This other entrance may be inside the house, not out. This method does have the advantage of not using toxic substances, being less stressful for the people involved and resulting in clean remains. The dead bees can be composted, the combs melted down, and any remaining honey eaten. I don't recommend feeding this honey to your bees because of the possibility of foulbrood infection.

The first time I killed a colony in this manner it was in the wall of a small house in which a pregnant woman lived. Detergent would not have worked, she couldn't afford a proper removal and did not want insecticide applied. Furthermore, the landlord was not going to pay to have the stone wall taken apart. The bees' entered through the separated seam of the metal duct of an air vent into the crawl space. This crawl space was tight and extremely difficult to work in. The rest of the house was pretty much falling apart. As fast as I could find and seal one hole, the bees managed to find another, sometimes several, even as far away as the other side of the house. Before I was finished (and they were finished), the entire house looked like it was held together with pieces of duct tape. In this instance I anticipate a reinhabitation at any time, even though the landlord assured me that all holes would be properly caulked.

When the combs are exposed and accessible, the detergent method works very well. This is done comb by comb, since each bee must be sprayed. As combs are sprayed, they are removed (cut loose with a hive tool) and placed in a garbage bag or plastic pail. Sometimes they are removed with bees adhering before being sprayed. These combs are unfit for contact with other bees and must be disposed of or melted down.

The method I use most and am most comfortable with (although I am never comfortable killing bees) – is the vacuum. It should be used with some sort of proper apparatus attached or the bees will sticky it all up

and make a real mess. I fit a tube into the lid of a five-gallon plastic bucket which is perforated with a few thousand air holes. This bucket fits in another bucket, unperforated, into the bottom of which is plugged the hose from the vacuum itself. This arrangement collects the insects in a removable container and isolates and protects the machinery.

Once they are in the bucket (a large colony can require two five-gallon buckets, possibly even more) there are options:

They can be poured into and in front of an empty, prepared, or even inhabited but weak hive.

Or, they can be killed in the bucket in various ways: Immersion in detergent solution, for example or by allowing them to just die undisturbed.

Once dead they are readily compostable and the combs will be clean, wax and honey possibly usable.

A word about dying bees: It seems that sometimes they make the decision to die and then they go about it quickly. A bucketful of yellow jackets may last a long time, though, a bucketful of bees might not last two hours. A freshly-dead mass of bees generates the worst odor in the world – or so it seems to a beekeeper – so try not to breathe it in when you open a container of them. It is not only horrible, but it stays with you. I suspect a pheromonic event – opposite to the nasanov, both in intent and content. The odor goes beyond that of the smell of other dead animals, such as a mammal of equal weight. I speculate that there might be a death pheromone involved with the decision to die and the communication of such. Yellow jackets don't manifest it. They stink, to be sure, but it's not the same. Of course there's a difference in mass, but still .

Once bees have lived in a particular cavity, there is always the chance they will come back, therefore scrape and clean it out thoroughly and seal it. Bees are attracted by scent, so of course the more bee-stuff left in there, the stronger the attractant. But there seems to be other factors. *Knowledge*, for example. Other bees in the neighborhood appear to *know* a particular location as a bee place. I have observed them cruising specific spots on buildings that have been cleaned

out completely, washed with ammonia and sealed. I think that, as well as scouting for new locations, they keep in touch with the old sites for possible occupation later on. Filling the cavity with insulation will help, especially if it's packed in tight. They may find the cavity, but not be able to use it.

A note of caution: Just as it can be a positive adjunct bee removal can interfere with beekeeping. There is definitely more involved than just retrieving a free-hanging swarm. It will take you away from your apiaries. Working for other people will take precedence over the work you need to do for yourself. You can always put *yours* off, whereas *they* require immediate attention since they are in crisis. And removals almost always take longer than estimated and require travel and repeated trips. Bees are responsible for one of the more common natural emergencies in everyday life. And if you are a remover, you have a responsibility. Since you *do* do it, you pretty much *have* to do it.

Beekeeping is one thing and bee removing is quite another. You need specialized equipment. A dedicated truck. One ladder isn't enough. Two ladders aren't enough. I regularly run with six, including a 34-foot extension. And one beesuit isn't enough. You will inevitably encounter some outrageously nasty insects out there, and you won't be able to back off and come back another time. I have been severely stung while wearing *two* suits.

I got into removal innocently enough. Being a nature boy I was involved in the organic farm movement of the mid-sixties. In the mid-seventies, the farm was lost to an insidiously progressive subdivision, following a vote among the partners of which I was one, to sell.

One day, Ormand (Ormand Aebi, past holder of the official world's record in the *Guinness Book Of Records*, for the most honey from a single hive in a single season with a single queen) and inquired as to whether I'd like to go out on some removal jobs. He always got a lot of calls, and wanted to curtail his own running around and have more time for his own bees. Thinking naively that it would be a good way to get more bees to work with I said sure.

It's too late for me, now. But beware, it might happen to you. ☺



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HONEY BEE SPILL HANDLED WITH SOAPY WATER

Firefighters Learn New Skill

It could have been a scene from a horror movie, but it was real alright – a “tornado cloud of bees” as one witness described millions of honey bees pouring from 672 single deep colonies dumped off an overturned 18-wheeler on a major northwest Arkansas traffic artery May 30, 1993.

Bees swarmed over two cars hit by some of those hives when they fell from the truck. Injured people were trapped inside, and rescue workers were stuck outside. About a dozen at the scene, including firefighter/rescue workers and police, were hospitalized for stings, four in serious condition. U.S. 71 North, about two miles south of Mountainburg, Arkansas, was not fully reopened to traffic for 26 hours, the longest Arkansas State Police Capt. Tom Henson remembers that steep, winding section of highway closed (even by weather) in the 15 years he has been stationed in the area.

“I don’t think there’s ever been any accident like this in the state,” Henson said. “We had no plan for it.”

Luckily, two areas beekeepers knew what to do, and the information they had came directly and indirectly from *Bee Culture* magazine and its editor, Kim Flottum.

Dan Self, president of the Western Arkansas Eastern Oklahoma Beekeepers Association and member of the Oklahoma Beekeepers’ Association, saw a training video on emergency procedures for handling just such an accident last fall at a state meeting of OK beekeepers. Flottum produced the video, which was made specifically for training fire/rescue units in handling honey bee-related emergencies. He also ran the information covered by the video in a lengthy special report in the July 1992 issue of *Bee Culture*. That’s where Nathan Kerby, a Crawford County District 5 Fire Chief, rescue team member and beekeeper saw it.

“The video showed emergency procedures for a bee accident almost identical to the one that happened on highway 71,” Self said a few days after the accident. “And at the time I saw it I thought I’d probably never need that information in a million years. I didn’t think that many bees moved through this area. Since then (the accident), I’ve found out different.”

**“Firefighters
hosed down
the cars with
soapy water
to kill the
bees so the
injured could
be removed.”**

When the accident occurred, frantic police and rescue workers called Self, who lives in Arkoma, Oklahoma, about 40 miles from the wreck site, because his name, and Kerby’s are on a list of beekeepers to be called in case of swarms. Kerby lives in Cedarville, Arkansas, in Crawford County, where the accident occurred.

“We didn’t know about using soapy water on the bees,” said Police Captain Henson, “but Mr. Self told us to contact Mr. Kerby and have the firefighters put soapy water in the pumpers.”

Kerby said he was in communication with ongoing rescue efforts by that time

and already knew to have the soapy water in the pumpers.

“We weren’t equipped to handle bees, but our fire chief says we’re going to get prepared now,” said Ed Smith, a first responder with the Mountainburg fire and rescue team. Smith, and a passing trucker, Norman Enterline, donned two hazardous material suits Enterline had in his truck and were able to get chains hooked onto the two cars covered with bees, so that wreckers could pull them out from the overturned tractor-trailer and away from the scene.

Firefighters then hosed down the cars with soapy water to kill the bees so the injured could finally be extricated and taken to area hospitals.

Kerby and Self arrived at the scene within minutes of each other, and half a dozen other beekeepers from the area showed up, after a televised appeal for beekeepers to help control bees at the scene. Kerby said he and Dale Inge are the only two firefighters in Crawford County who are also beekeepers, but that many residents along U.S. 71 in that area keep bees.

Because of his 15 years of experience as a county firefighter, Kerby was put in charge of the clean-up, which was aided by the state highway department.

“We had to go in and scoop up what we could with a front end loader and take it to a private landfill. When we get a hazardous spill, which I guess you could say this was, the fire department’s in charge,” Kerby said. “I had seen training films on this type of accident and I had read about how to control it in *Bee Culture* magazine.”

“The accident taught us a lot,” Henson said, “and a lot of things we did, we would do again, but we need it on paper. If it happened again right now, in absence of a plan, I think we would know who to call. But personally, I think we need some kind of a plan, and that’s what I plan to talk to Capt. Fletcher about.”



Pesticides

o.b wiser

Working with applicators is the best way to avoid this problem. Sometimes you can't.

Alfalfa weevils are chewing up the crop and the farmer knows he has to stop the weevils before they stop him. So he calls a local pesticide applicator who tells him the best deal is to do it by air. If you are lucky, a call comes about 10:00 p.m. on the night before the plane takes off and you are cordially asked to get your bees out of the way.

You blubber something about your truck being broken down or the bees having two supers of honey on and you cannot move them. The farmer says "Too bad, I have to spray so you'll have to just take what comes. Goodnight." Click!

There's a sickening feeling in your stomach. Are you going to go out there and be superman and move your bees in only a few hours or let them take their chances? It has been my experience that the hoped for light-kill is a fantasy.

Dead Bees Once the dreaded insecticide has hit the field, your bees are dead ducks. Having been a bee inspector, I used to judge how badly a beekeeper was hurt. There were light, medium and heavy kills. A light kill meant dead bees peppered on the ground in front of the hive — no damage inside the hive. Medium kill meant a solid mat of bees, one layer thick — minor damage inside. A heavy kill had several layers that stank to high heaven, with brood dead from chill and likely loss of the queen.

Spraying with Sevin® or micro-encapsulated whatever will kill the hive. Bees will store the tiny dust-like particles of pesticide with incoming pollen because they are about the same size. You lose the combs outright, or you can wait several years for the pesticide to break down.

Dead Outs. If the cluster has died in

the hive make sure you scrape or brush the dead bees out and stagger the frames so that the dead bees in the cells will dry out. I usually leave the hives on location for a week or two to dry out while I care for the half-dead hives.

Heavy Kill What you do with a hive that is hit heavy depends on the time of year and your options. If it is late summer, the honey flow is over and your options are limited. You simply have to unite your hives to equal what it will take to get through the winter, that is, two boxes of bees.

If you have the option to move

south, then move and feed to stimulate the queens to lay.

If you have been affected by early-season mosquito Abatement sprays then you have some hope. For some reason there always seem to be some hives that escape injury. Likely they were on a coffee break when the spray hit. Use these to beef up the weakened hives. If you have a honey flow, then let nature build them up. But whatever you do, pull the supers off the weakened hives. Supers on a sprayed and weakened hive are deadly.

Kills must demoralize the bees

Continued on Next Page



This is what a 'light' kill looks like. Not 'too many' dead bees out front, and little or no damage inside.



If moving colonies isn't feasible, maybe protection is. To keep bees out of sprayed fields, screen the bottom entrance and provide LOTS of upper ventilation. One way is to use screening on top, or offset the top super about 2 inches and screen that gap. Do this for a day, no longer.

PESTICIDES ... Cont. From Pg. 383

because they just give up. So cut your hives down to the right amount of space. If it is early and you have only enough bees to fill one box, take them down to one box.

Feeding Hives that survive a heavy kill require feeding because all the field bees have been killed. Even though the hive may have lots of bees they are too young to work in the field, at least for several days or a week. They will 'mature' faster to compensate for lost foragers, but it takes time. Feeding is also very important to keep the queen laying eggs. Provide a thin syrup. Pollen, or a pollen substitute would be helpful, too.

Spray-killed bees are demoralized and out of balance. When anything like this happens the bees always blame the queen. She gets out of synch, and the bees think she is a dud and often kill her. So keeping pesticide-killed hives queen-right is a constant task. Check them every two weeks. Feeding goes a long way in keeping queens alive and well. A hive that goes queenless and tries to raise a queen is in a bad way, too, and usually needs to be united to another colony.

Moving It is often advisable to move to a better location (if one exists) where the bees will have more protection and better forage. Getting them closer

to home is a good idea so you can care for them more often.

We as beekeepers are sitting ducks. Being a nice guy has never won me any brownie points with the pesticide applicators. When I patrolled aircraft applicators in California, I found them to be a very different sort of human being. They were always living on the edge, exhausted, overworked and cranky. They have their problems — like a county inspector shutting them down because one of their nozzles will not shut off, or telling them they have to quit making money because the wind has kicked up two mph above the limit, when there is still plenty of time to apply the rest of their load. It costs them money and time to return to finish that last section.

The farmer has his crop and the beekeeper has his. Trying to work

with pesticide applicators and farmers is the only way losses can be reduced. If you cannot move your bees make sure that the pilot knows where they are located so extra precautions can be taken to reduce bee loss. It's not easy to see bees from the air.

Take the time required to be as knowledgeable as possible about the pesticides used in your area, when they are going to be used and what the hazards are.

Pesticides are a fact of life and learning about them is the only hope a beekeeper has of surviving.

Hopefully the United States will not come to the day when all the natural pollinators have been killed and the honey bee is on the endangered species list. Then everyone will lose — the beekeeper, the environment, and the farmer. We all live in the same interdependent ecosystem. We need to work together to protect each other. And **I learned that the hard way!** ☺

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HOME HARMONY

ann harman

Corn Bread

"As American as apple pie." Wait a minute - corn bread, in its many variations, is just as American, perhaps even more so. Corn grows well in many areas of the United States and became a popular grain with the early settlers. Mills appeared wherever a suitable stream existed so that corn, along with wheat, could be ground for home use. As you drive through the countryside today you can see evidence of these grinding mills in the road names: Hipsley Mill Road, Muncaster Mill Road and, my favorite, Miller's Mill Road. Fortunately, some of the mills actually exist today, turning out a wonderful stone-ground cornmeal.

Even in these modern times we can still enjoy a wide assortment of cornmeals: white or yellow; a fine grind suitable for sprinkling on bread baking pans or coating chicken or fish, or a coarse grind for your favorite cornbread.

A tour through cookbooks produces a long list of corn bread recipes. From a basic corn bread recipe you can have a pan of bread, muffins or sticks. Slight changes in the recipe will give you hush puppies, corn pone, griddle cakes, corn dodgers, waffles, mush, tortillas, salt-rising and sour-dough breads, hominy and grits. Corn bread pays no attention to the Mason-Dixon Line. A recipe for Southern Corn bread is closely followed by one for Yankee Corn bread.

Except for a very traditional Southern Corn bread recipe, you can both put honey *in* and *on* corn bread. Corn bread is at least as versatile as white bread, and much more interesting. How about lunch of soup, salad and a corn bread muffin. Or you

could have dinner of baked ham, applesauce and a piece of hot corn bread. Would you like hush puppies for a picnic, or cornmeal pancakes with honey for breakfast?

If you would like to vary the flavor of your corn breads, try adding some herbs, or finely chopped onion, or diced ham, crumbled bacon, or cheese, or even some chopped, cooked seafood. Chopped green chilies and a dash of red pepper make a zippy corn bread with Mexican-style meals. Do a bit of experimenting; you can't ruin corn bread.

Many people like corn breads to have a nice crispy crust. You can achieve this by using a cast iron pan or skillet and preheating it at 425°F. Grease it well before heating. Corn bread needs some wheat flour to keep it together during baking and serving. However you can substitute other flours for variety. For example you can substitute 1/2 cup buckwheat flour for 1/2 cup cornmeal. You can use whole wheat flour instead of all-purpose flour. Try to keep the total amount of flour plus cornmeal the same as the original recipe.

Honey Corn Bread

First we'll have a basic corn bread recipe. However, if you have a favorite one, and it calls for sugar, just substitute honey in equal measure.

3/4 cup cornmeal
1 cup flour
3 teaspoons baking powder
1/2 teaspoon salt
1 cup milk
1/4 cup honey
1 egg, beaten
2 tablespoons melted butter

Mix together dry ingredients. Add milk, honey, egg and melted butter. Mix quickly; do not try to beat out all lumps. Bake in greased 8x8x2-inch pan at 400° for 25 minutes.

The Honey Kitchen
ed. by Dadant

Corn Bread

Now for an interesting variation. This corn bread is very moist and very rich, certainly worth a try for special occasions.

1/2 cup flour
1-1/2 cups yellow cornmeal
1 teaspoon salt
1 teaspoon honey
3 teaspoons baking powder
3 eggs, well beaten
1 cup milk
1/4 cup cream
1/3 cup melted butter

Sift dry ingredients to mix thoroughly. Beat in eggs and milk with a spoon until well mixed. Beat in the cream and, lastly, the melted butter. Pour into greased 8-1/2 x 11-inch pan and bake at 400° for 18 to 20 minutes.

Theory and Practice of Good Cooking
by James Beard

Honey Corn Bread

Here is a variation using whole wheat flour. This corn bread makes an excellent breakfast or a mid-morning snack with a cup of good coffee.

2-1/2 cups yellow cornmeal
1 cup whole wheat flour
2-1/2 teaspoons baking powder
1 teaspoon baking soda
1 teaspoon salt
2-1/2 cups buttermilk
1/2 cup vegetable oil
2 eggs, beaten
2 tablespoons honey

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HOME ... Cont. From Pg. 385

Combine dry ingredients in large mixing bowl. Add remaining ingredients and mix well. Pour batter into greased 9x13-inch pan. Bake at 425° for 20-25 minutes or until golden brown.

Cooking With Honey
by Judy Powers

**Sesame Wheat Germ
Corn Bread**

Take a loaf of this next recipe to a potluck supper. It is a truly delicious variation of basic corn bread.

- 1-1/2 cups all-purpose flour
- 1/2 cup honey
- 1-1/2 teaspoon salt
- 1-1/4 teaspoon baking soda
- 2 cups cornmeal
- 1 cup wheat germ
- 1/2 cup sesame seeds, toasted
- 2 cups buttermilk
- 3/4 cup salad oil or melted butter or margarine
- 2 eggs, lightly beaten

In a large bowl, stir together flour, salt and soda until thoroughly mixed. Mix in cornmeal, wheat germ and sesame seeds. In a separate bowl mix together

buttermilk, oil or melted butter, eggs and honey. Stir liquid mixture into dry ingredients just until blended. Pour into a greased 9x5-inch loaf pan. Bake at 375° for about 55 minutes or until a toothpick inserted into center comes out clean. Let cool in pan for 5 minutes, then turn out onto a rack to cool completely.

adapted from Cook Book of Breads
Sunset Books

Indian Corn Bread

Although the title of this recipe indicates this corn bread originated with the Indians, I doubt it. Blueberries and pumpkin do not ripen at the same time. I prefer to make this variation of cornbread with fresh blueberries and canned pumpkin. However, you can make it any time of year with frozen blueberries and canned pumpkin, two other foods we consider all-American.

- 1 cup unbleached white flour
- 1 tablespoon baking powder
- 1/2 teaspoon salt
- 1 cup yellow cornmeal, preferably stone-ground
- 1 cup fresh blueberries or frozen

- blueberries, thawed and drained
- 2 eggs
- 1/4 cup honey
- 1/4 cup melted butter or light cooking oil
- 2/3 cup milk or half & half
- 1 cup cooked mashed pumpkin (strained) or canned pumpkin

Sift together the flour, baking powder and salt. Mix in cornmeal with a fork. Gently toss in berries so all are coated with flour. In another bowl beat the eggs until light in color and slightly thickened. Add honey and beat, then add butter or oil, milk and pumpkin and beat to blend. Add the flour mixture and combine as gently as possible with a rubber spatula so as not to crush the berries. Pour batter into a 9x5 buttered loaf pan. Bake at 350° for 50 to 55 minutes or until the top feels softly springy. Let sit in the pan a few minutes before removing to rack. Best served warm from the oven, or toast later under the broiler.

The Garden Way Bread Book
Ellen Foscue Johnson

Check the favorites in your cookbooks but don't hesitate to do some experimenting with a corn bread recipe. You'll have so many recipes you won't serve the same one twice for at least a year. ☺



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A business plan can help. A business plan is a statement of what the business is, its operation, management, interaction in the market place, financial condition and its strengths and weaknesses. A business plan helps you to develop your company goals. In addition, a business plan is almost always required by lenders considering a request for a commercial loan.

Where Do I Start?

A current business plan will provide the means of evaluating where your honey business is and where it needs to go. Find a quiet time when you can relax and think. Be creative – and write it all down on paper. By writing ideas on paper, you will be forced to look for consistencies or inconsistencies in planning. It will also help you organize.

The format of your business plan depends on the size and maturity of your operation. The following format is a good guideline:

- ✓ Executive Summary
- ✓ Business History
- ✓ The Product/Service
- ✓ The Market
- ✓ The Competition
- ✓ Marketing
- ✓ Operations
- ✓ Management
- ✓ Financial Projections

The Executive Summary

This should be a two- to five-page summary of the key elements of your

business plan – the bait that encourages a prospective lender to read on. Sometimes, the summary is all that a lender will read, so it must be good! At a minimum, the summary should include at least the following four elements:

✓ A description of your business and the target markets for your honey.

Example: No Such Thing (NST) Honey Company is a producer of light amber honey which is packaged for sale to health food stores, restaurants and bakeries. NST has been marketing locally-produced honey in Denver for the past five years

The description should set you apart from the other producers in the area and stress your strengths.

Example: NST markets clover and alfalfa honey (high quality honeys with a mild flavor) in the Denver area. NST's honey packaging is carefully designed to reflect current trends in consumer preferences as identified by the National Honey Board

A description should also state whether the business is competing in a large existing market or if you have created new ones.

Example: NST Honey Company has identified a profitable market for five-ounce honey gift jars. These are sold to several gift stores in the Denver area. According to a consumer use and attitudes study conducted by the National Honey Board, honey is used as a gift in 25% of the households who use honey. Sales of our gift packs have increased steadily each year as follows

And the description should say why you will succeed in your market.

Example: The market for locally-produced honey continues to expand.

In the Denver market, NST plans to expand sales in restaurants and bakeries. NST's goal is to continue to market our successful gift jars and to expand into the lucrative restaurant and retail bakery markets.

✓ A description of your management team, emphasizing the relevant experience and special skills of each key person.

Example: NST's president and chief operating officer is Joe Beekeeper. Beekeeper has 12 years experience in beekeeping operations. The vice-president is Mrs. Beekeeper. Mrs. Beekeeper is responsible for record-keeping, sales, marketing, packaging, delivery, truck maintenance, cooking, cleaning

If there are management weaknesses, you should discuss them and how and when you expect to correct them.

Example: NST Honey plans to expand its marketing efforts. The current management team lacks experience in advertising and public relations. NST will hire a public relations firm to create an image and plan for NST's 1994 promotions.

✓ A summary of your financial projections for the next three to five years. Projections are a picture of where you want the business to be in the future. The company's past statements of assets, profit and loss and cash flow, plus any of your plans for expansion should be used as the basis for the projections.

✓ A summary of your funding needs and how the money will be spent. This will tell the prospective lender how much money you will need and when you will need it.

Continued on Next Page

PLAN FOR SUCCESS

Business History

If you are writing a business plan for your own planning purposes, you can omit a discussion of the history of the business. This section is for your prospective lender. Before lenders can evaluate where your business is likely to go, they need to know where it has been. This section of the plan should discuss:

✓ When the honey business was founded, its progress to date and a brief discussion of the founders (perhaps this is you and your spouse – who are also known as the “management team”).

✓ What form of business you operate (sole proprietorship, general partnership, S corporation, etc.).

✓ Past loans to, or investments in, the company. This includes loans from the government, your in-laws and you.

✓ Products and services you market and the success of each. If you have sound reasons for believing that your past success does not indicate your future potential, it would be good to note that here. You can discuss this more fully elsewhere in the plan.

The Product/Service

The purpose of this section is to say precisely what you are marketing – and communicate your enthusiasm for your product. It should include a discussion of all the company’s existing or planned products or services. For example, you may be marketing liquid honey and beeswax now but you might want to start marketing comb honey and pollen in the near future. You should write this all down in language which anyone can understand. (Although beekeepers know about creamed honey your lender may not – and you should explain fully.)

If you need, or have obtained, government approvals or clearances – such as honey house inspections – you should discuss those here.

The Market

A description of your present market and future opportunities is important to you and to prospective investors. As part of your overall description of your honey market, you should cover the following:

- ✓ Who are my customers?
 - Bakeries
 - Restaurants
 - Retail stores (grocery, health food, gift shops, etc.)

Consumers (direct sales at farmers markets, roadside stands, etc.)

- Other
- ✓ What is the historic (last five years) and forecasted (next five years) rate of growth for each market segment (each customer group)?

✓ Where are your present and future markets?

- Regional
- National
- International

✓ How will you sell to each market segment?

- Agents/brokers/distributors
- Direct

✓ At what level does each market segment make a buying decision?

- Grocery store or retail store manager
- Purchasing agent at retail store chain headquarters
- Owner/Operator

✓ How does each market segment purchase honey?

- Competitive bidding process
- Annual or long-term contracts
- Unit purchases (cases, pails, drums, etc.)

✓ What are the key selling points to each market segment? (For instance, the National Honey Board has published key selling points for bakery, confections, dairy, dressings and sauces, snacks, processed meats and health food upon request.) Some of the key points for honey are:

- Flavor – Honey imparts a unique, rich flavor to most foods.
- Consumer appeal – Consumers are willing to pay a 20% premium

for honey products.

All-natural image – Honey is the only sweetener that provides a natural image. More than 90% of consumers perceive honey as wholesome and natural.

Sweetness – Rich in fructose, honey is a potent sweetener.

Other key selling points which are unique to your company include availability of the type of honey your customers want and any special service you provide.

✓ Does the market have any special characteristics?

Seasonality – the peak honey-buying months are during the fall and winter.

Others

The Competition

Your business plan should include a list of your competitors and indicate the share or market you expect to maintain or capture for the next three to five years. You need to state your reasoning for your forecast. How do you expect to draw customers from your competitors – better service, better quality, better packaging? A prospective investor will want to know your views on how you plan to meet and beat the competition in your selected markets.

Be objective. Perhaps the greatest temptation you will face is to overstate your own competitive strengths and understate those of others. In the end, this is self-defeating since you will base your actions on the directions you plot in this business plan. Prospective investors are unlikely to back you if they think you have an unrealistic view of the competition.

Marketing

Of all the elements required to make a business successful, none is more critical than marketing. Honey is a great product with excellent value but it won’t sell unless you tell its story to your customers.

Your marketing effort is the foundation of all other aspects of your

PLAN FOR SUCCESS

business. Marketing attracts the sales dollars which cover the costs of bees, equipment, vehicle expenses, packaging and more. Sales dollars also provide the profit upon which to build the future of your business.

Your marketing plan or strategy is a combination of:

- Your **PRODUCT**
- Your **PRICE**
- Your **PROMOTION**

Following are some points that should be included in this section of the marketing plan:

✓ **Channels of distribution.** Will you be selling honey yourself, contract with brokers or use some other way to get your honey to market? How does your plan compare to others in the honey business? This is important, and should be considered in some detail, including costs of each method.

✓ **Pricing strategy.** How do you plan to price your honey and how will your prices compare with the existing prices in the marketplace? Will you offer special service to your customers, such as regular inspections, unique size, etc.

operations is a major factor in your success – or lack of it. You should state in this section of the business plan the nature, quality and extent of your honey production facilities. You should also spell out your strengths and limitations.

If you intend to use your business plan to attract investors, you need to describe how well your operation can meet your business goals. A good question to ask yourself is whether *you* would invest in your operation if the roles were reversed.

Management

If the business plan is for your own use, you need not include information on the management – you – here. However, information on you will be of great interest to prospective investors who need to have confidence in your abilities. Personal information should include your relevant business experience, educational background or other information which would help a prospective investor conclude that you have the necessary skills and resources to get the job done.

of capital), if available, for up to three years.

- ✓ Current financial statements.
- ✓ Projected balance sheet information for the next three to five years.
- ✓ Profit and loss projections and cash flow projections on a monthly or quarterly basis, if possible, for the last two years and for the next three years.

An income statement and balance sheet are essential to the operation of your business to let you know where the company has been during the past. The projections are an attempt to tell you where the company is going in the future.

A good forecast of cash flow will allow you to make decisions about whether to expand your business or the need for bank loans. The forecast will point out slow periods for honey sales and help you plan your cash flow.

Planning Hints

Whew! A sound business plan requires a major investment of time – something beekeepers never have enough of. However, your business will only be as good as the effort you put into it – which includes making use of your plan.

As you complete major sections of the plan, ask for third parties – accountants, lawyers, small business development departments at the local college – to give you guidance and advice. After you pull the entire plan together, ask these independent reviewers for comments.

Change in the honey industry is constant. Be alert to the market, read the journals (beekeeper's, business and political) for up-to-date information, keep in touch with your customers and certainly your competition. With current information, review your business plan regularly. A workable business plan comes from experience, current information and constant use. It can be your key to success.

Remember, a good business plan is good for the honey business! ☺

You're only as good as your business plan, and any lender knows that up front.

✓ **Promotions.** No matter how good your honey is, it has a better chance of succeeding against the competition with promotion – advertising and public relations. You need to do your part. Use Honey Board materials or other promotional items.

✓ **Distribution plan.** Do you plan to start with a local market and then expand regionally? Do you plan to start with farmer's markets and then expand to bulk markets? You need to state that here.

Operations

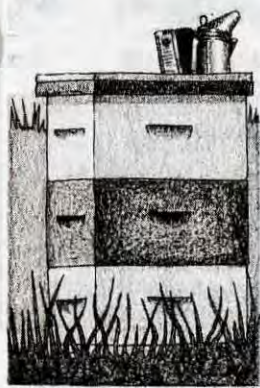
Effective management of your

Financial Projections

Here is where you put a dollar amount on everything you've said in the business plan. You will need to bring together all of your sales, market and cost projections in a financial format. Again, the three- to five-year financial projections will serve two purposes: to guide your business decisions and to inform prospective investors.

At a minimum, your plan should include:

- ✓ Your past financial statements (balance sheets, profit and loss statements and statements of sources



BEE TALK

richard taylor

"It makes me feel good to meet a capable and resourceful beekeeper who takes his craft seriously."

I recently made the acquaintance of a beekeeper in Oregon who, in the 16 years since he started with one colony, has made himself a master of the craft in all its aspects. So I'm going to talk about him and some of his methods.

This is Mr. Jerry Schwanke, who retired a few years ago to devote himself, with the help of his wife Shirley, to orchards and bees. They have about 300 apple trees and five acres of hazelnuts, and it was this that led him to an interest in bees. He thought he should have one or two colonies for pollination, soon got caught up in the craft and found he had a natural talent for it. He now has about 125 colonies and plans to stay at that number.

Skilled at mechanics and woodworking, Jerry makes all his own equipment except frames. He moves his bees once or twice a year, to take advantage of the best flows, and then moves them all to a special wintering location, using a flatbed trailer that holds 40 colonies and can be loaded and unloaded quickly with the help of one other person.

Jerry produces strained, creamed and cut-comb honey of the finest quality. The comb honey comes mostly from hairy vetch, and for this he uses about 25 of his strongest colonies. One-pound packs currently bring \$3.25. His creamed honey is something of a specialty. He began with a

kitchen mixer, but soon devised a special tank. The mixer itself is made from the three-blade propeller of an outboard boat motor and it's cranked by a variable speed motor. Now he can turn out 12 gallons of creamed honey in a half hour – one-sixth the time it took with the kitchen mixer.

Jerry and Shirley have had great success with their gift packs, consisting of four small jars of strained honey from different floral sources, packed together in a small and attractive little wooden crate. These little crates are very easy to make in large numbers, and gift packs with a variety of honeys are always sure sellers and bring the top price.

Most of their honey is sold at the local farmers' market, where the

Schwankes have offered their products each Saturday morning, spring through fall, for 10 years. Selling at farmers' markets can be very successful unless too many other beekeepers set up at the same time. It can engage the whole family, and the personal contact with customers is not only enjoyable to the beekeeper but educational for the customers. There is probably no better way to promote honey. The Schwankes offer samples, using plastic spoons that are purchased by the thousand and used, of course, only once. They say that this has boosted their sales more than any other single thing. Their honey sales are so brisk that sometimes they are forced to buy from other beekeepers. Over 80% of their sales are retail.

Jerry Schwanke with the supers he made one winter. Their perfect construction is characteristic of his way of doing things.



Schwanke's apiary management is well organized. For winter feeding he mixes sugar syrup in a 55-gallon drum over heat, then fills 2-liter soda pop bottles. These have a slight rim near the opening, and so, with perforated caps, they can be inverted into a hole in the hive cover without tipping over. When feeding is over the hole is plugged with a small plastic stopper.

In spring the colonies are equalized by distributing brood and bees from the stronger ones to the weaker ones. Any winter losses are made up by creating five-frame nucs with new queens. Each colony consists of two full-depth hive bodies, nine frames in each. Swarming is reduced somewhat by the equalization just de-

Continued on Next Page

scribed, then further reduced by rotating the two stories, twice if necessary, to break up the brood nest and provide new space in the combs for the queen to lay in. Jerry bases his requeening decisions entirely on performance. If a colony has combs with lots of solid brood, then he leaves well enough alone and does not requeen, even when the queen is heading into her third year, but if the brood pattern is poor it is time to requeen, no matter how young the queen may be.

Jerry Schwanke aims at the highest production and efficient marketing without becoming bogged down in fancy or time-wasting management systems. Things are done in a well-planned, orderly way which experience has shown to be effective. It always makes me feel good to meet a capable and resourceful beekeeper who takes his craft seriously and does things that need doing, when they need doing, and it was a pleasure to get to know this one. ☺

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PERFECT ROUNDS

diana sammataro

Developing a market for round comb honey involves a variety of skills, lots of work and sometimes just plain good luck. Some of these you have little control over – the type and timing of the honey flow, the proximity of population centers, finding a broker or buyer who likes comb honey and has a steady market for your product and the like.

But there is one aspect of developing this market over which you have perfect and complete control, and that's handling and packaging harvested comb honey.

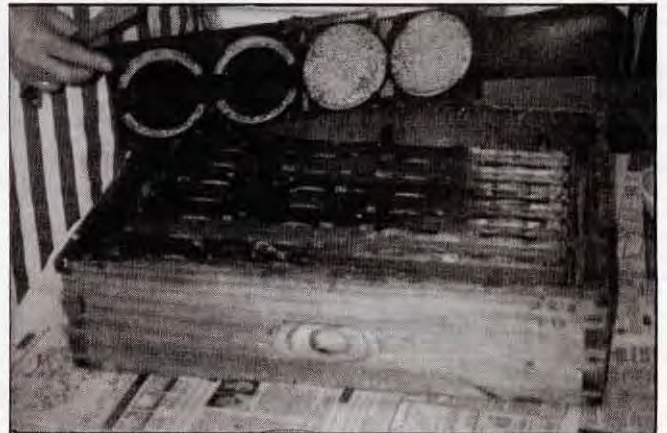
Before the harvest, before you start removing bees and pulling supers, there's one thing you should do a day before you start. Because of the construction of these supers the bees often build burr comb between the bottom of round comb frames and frames in the super below. If you just pull supers you will have dripping honey from this comb all over your truck, kitchen table or wherever you end up working with it.

To avoid this, the day before you harvest, lift supers enough to break the comb, scrape it away and the bees will clean it up quickly. Some beekeepers, who use multi-outlet escape boards (suggested), accomplish this automatically. But if fume boards are used on a single trip to the beeyard, this must be considered, or make an earlier trip.

The cappings on these frames are no tougher, and, it seems usually more fragile than on regular extraction frames. As such, handle these supers with care. Slamming or throwing them into the truck; letting them slide around in back; even dropping them on a loading dock can, and will, fracture some of the cappings in the super – rendering them unsalable. Don't set supers on rough surfaces, in tall grass, in dusty areas – or anywhere the exposed cappings can become damaged or soiled. You are dealing with a direct-to-consumer product. Handle with care, and go gentle to market.



1) Harvest supers that are full with all cells capped. If the flow has stopped harvest those rounds that are capped. Don't delay so as to avoid travel strain and excess wax or propolis build-up. Bring inside, place on covered surface and remove super springs and adaptor board to relieve tension on frames.



2) Carefully remove each frame of rounds. If they stick don't force them out. Rather, tease or cut burr comb or propolis with a sharp knife. Start at the end with the adaptor board and carefully remove each in turn.



3) After a frame is removed, prune away excess burr comb or propolis to make disassembly of the two-part frame easier. Examine each round carefully while cleaning.



4) To extract the four round sections from the frame first carefully rest the frame on a solid surface. Insert a hive tool into the gap between the frame's two halves, starting at one end. Gently twist the tool's blade, prying apart the halves. Move along the length of the frame until the parts separate. Support the rounds when the halves fall apart. They will probably be connected by the single sheet of foundation and release as a group.

July 1993

Continued on Next Page



5) The next step is to separate the rings from each other by cutting the foundation. Protect the rounds with the covers (clear or opaque) as soon as possible to avoid damaging the cappings.

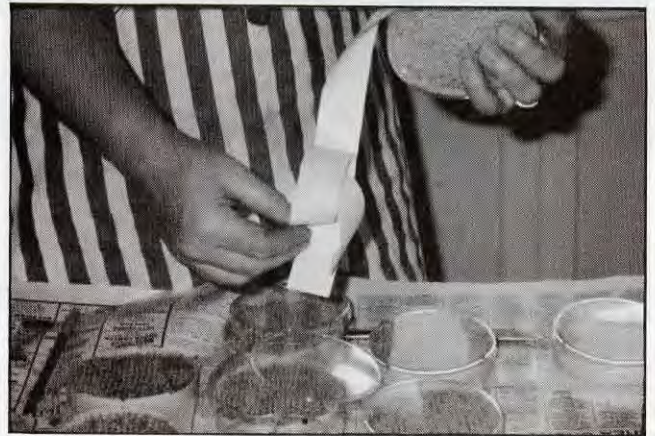


6) Putting covers on isn't tricky, but it takes a bit of doing. Make sure the three notches are aligned on the cover and the ring. If they don't 'connect' the cover will not be fastened securely, and it won't be level. Trouble later.



7) Using a sharp knife, or your fingernail, pare away the remaining foundation. Any propolis or excess wax should be removed, too, to ensure a clean surface for the label.

Some producers place rounds in a 0°F freezer overnight at this point to eliminate wax moth eggs or larva. Seal rounds in a plastic bag, and remove from bag only when condensate has dried.



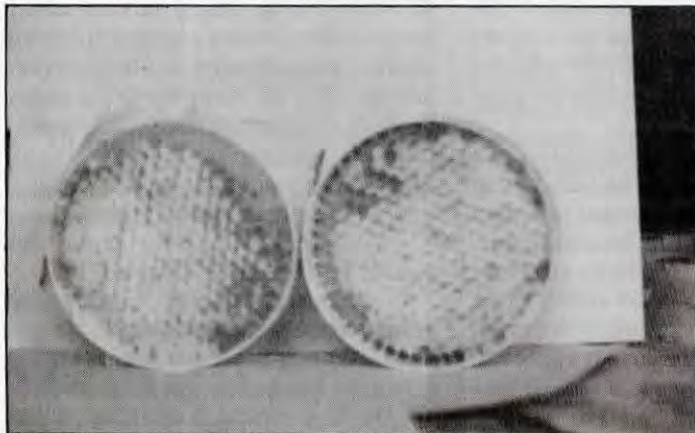
8) The final step is applying the label. If you use the wrap-around edge label stamp it before applying using an indelible, non-smear ink. Some put an additional label on the top or bottom regarding use of comb honey, history or other 'marketing' ideas.



9) To apply, peel back about a third of the pressure sensitive label and align on the side.



10) Carefully rotate the ring and peel back the rest of the label. If it goes on crooked you can remove it and reapply, but only so many times.



11) Rounds that aren't first rate can be sold as seconds at a reduced price. Better, they can be cut out of the ring, the damaged or unfinished part removed, the remaining piece drained, wrapped or boxed and sold as cut comb honey. Or, use the cut piece to slip in a jar of liquid honey for a chunk honey product. Don't give away a damaged round - use it to its best advantage, and for its best price.



12) Some rounds can't be salvaged. Cut out and save to extract the honey (place several pieces in a mesh bag and put in extractor). Or, put in a miller feeder (top super feeder) and feed back to the bees. The honey gets used and you can reclaim the wax. No waste.

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?Do You Know? Answers

1. **False** Honey bee colonies are typically rented for both apple and pear pollination but not for peaches. Most peach varieties are self-fertile whereas apples and pears are self-unfruitful and require the transfer of pollen between trees and varieties. Peaches can be pollinated with pollen from the same flower or flowers of the same tree. In addition peach flowers only have one ovule and thus requires fewer pollen grains. A small number of bees can do a lot of self pollinating since almost every visit to a flower results in self-pollination. Many growers consider thinning of a heavy fruit set to be a greater problem than achieving adequate fruit set.

2. **True** Strong overwintered colonies are considered superior to newly installed package bees for early season pollination. The stronger the colony the larger the number of bees available to go to the field, whereas with a package, most of the bees are needed to maintain the brood nest temperature and care for the young, thus limiting foraging activity.

3. **False** Both apples and almonds require cross-varietal pollination. Tart cherries, however, can be planted in solid blocks of the same variety since they are self-fruitful. Cross-pollination of existing commercial blueberry varieties is not necessary either.

4. **False** Honey bees visit pear blossoms primarily for pollen since the nectar is low in sugar and unattractive relative to other fruits. Honey bees work pears best when colonies are first put into the orchard and later they tend to be attracted to competing flowers in the area. Because of this, it is not recommended to move colonies into pears until 25 to 50% of the flowers are open.

5. **True** Strawberries are self-fruitful. In some varieties the stamens are tall so the anthers are close to the stigmas and pollination can take place readily as leaves and flowers are moved by the wind. Additional movement of pollen by bees increases yield only slightly. In other varieties, the receptacles may be tall and the stamens short and unless pollen movement is aided by bees, pollina-

tion, yield and size will be reduced, and many berries will be misshapen.

6. **True** Both alkali and leafcutter bees are far more efficient, on a bee for bee basis, than honey bees in pollinating alfalfa. Honey bees quickly learn how to steal the nectar from the flowers without tripping them. The primary motive in visiting the flowers for both species of wild bees is to collect pollen to provision their nests for their young. Pollen collection insures tripping the flower. Honey bees prefer to visit alfalfa flowers for nectar.

7. **False** Alkali bees nest in highly alkaline soils while the leafcutter bee prefers to nest above ground in holes about 3/16" wide by 2 - 4" deep, usually drilled in large pieces of wood.

8. **True** Cucumber vines have both male and female flowers which necessitates the movement of pollen from the male to the female flower. Since the flowers are separated and the pollen is dense and sticky, bees are necessary for pollinating this crop.

9. **True** While insect visits are not required in the production of carrots, onions and cabbages for human consumption, they are required in the production of seed. Flower and seed production normally occurs during the second year of development.

10. **True** Self-unfruitful and self-incompatible varieties do not set commercial crops when self-pollinated. Cross-pollination, which is the transfer of pollen between plants which are not identical genetically, is required.

11. A) California

12. D) almonds

13. C) alfalfa

14. Colonies might suffer from insecticide poisoning throughout the year from drift and insecticides might contaminate other floral sources found within the orchard. Second, foragers get locked in on other floral sources available before the orchard starts to bloom, and normally they would not switch to the target bloom until they become dissatisfied with the other floral sources.

15. Bumble bees are considered to be more efficient pollinators of red clover and blueberries than honey bees since they have a longer proboscis which aids them in reaching the nectar supply. This increases the chances of them achieving pollination. Even though they are more effi-

cient, population levels fluctuate from year to year and are usually not sufficient to pollinate large acreages.

16. Reduced yields
Misshapen fruit
Smaller fruit
Increased fruit drop
Slower maturing fruit
Lower oil content (oil crops)
17. Colonies are highly variable in population strength which affects the potential size of the foraging population. The number of colonies does not necessarily determine the number of bees that actually end up working on the target crop. Many factors affect the number of bees working the crop such as attractiveness of the flowers, accessibility of floral rewards, plant density, competition from other pollinators, environmental conditions etc.
18. Large conspicuous flowers
Brightly colored flowers
Flowers with both male and female reproductive structures
Scented flowers (distinctive odors to attract pollinators)
Flowers that produce smaller quantities of dense, sticky pollen
19. Beetles, moths, butterflies, flies, hornets, wasps and ants

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

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QUESTIONS?

Quick Cut Comb

Q. I have harvested cut comb honey, packed it in standard plastic boxes and stored it in the freezer. When I take it out in the spring it has crystallized around the edges. Is there any way of reliquefying it without melting the wax comb?

Miles Raymond
Olathe, KS

A. None that I know of. This is a problem with cut comb honey. It seldom happens with circular sections. I believe cut comb honey must be marketed and consumed quickly for this reason.

Wax Moth Control

Q. How can I store my combs after extracting the honey? Would a cedar chest keep out the wax moths?

Russell Willsey
Sebring, FL

A. I'm quite sure a cedar chest would be useless. Not only would you be likely to get a sticky mess, but the wax moth eggs will be in the combs when you stored them, and I do not think the cedar would counteract them when they hatched. In the north, wax worms become a problem only in late summer, and the problem ceases with the onset of cold weather. In Florida I think your best bet is paradichlorobenzene, which you can pick up almost anywhere. Do not get old-fashioned naphthalene moth balls. Have your bees lick the combs dry before storing them, by setting them out near the apiary; otherwise the residual honey would absorb the odor of the crystals.

Cold Honey

Q. Does freezing cause crystallization in comb honey?

Bob Delap
West Fork, AR

A. I believe it is not possible to cause honey to freeze. Storing honey in a deep freezer will not cause it to freeze, nor will it hasten crystallization. On the contrary, it greatly retards crystallization, so that even such fast-granulating honey as goldenrod can sometimes be prevented from crystallizing by storing it in a deep freeze. It is standard practice to prevent wax worm damage in comb honey by lowering the temperature to near zero, and to store it sometimes for weeks or months in a freezer to prevent granulation.

Queen Cells

Q. Can a hive be split without buying a queen by making sure a queen cell is included in the queenless part?

Thomas Peachey
Guthrie, KY

A. Yes. The advantages of this simple procedure are almost certain acceptance and saving of the price of a purchased queen. The disadvantage is a delay of a few weeks while the new queen matures, hatches and gets mated. If you do this you should try to make available to the new colony more than one queen cell, in case one gets damaged, and you should select only cells made by a strong colony, to avoid getting a runt queen.

Editor's Note: Another disadvantage is that you do not know the heritage of the queen. She may be as good, or better, than the queen from the original hive. Then again, she may be worse and you will have lost even more time.

Super Size

Q. You stated in the Dec. '91 *Bee Culture* that a circular section comb honey super should be 4-1/4" deep. Is that inside or outside measurement?

Maurice J. Walsh
Limerick City, Ireland

A. These supers must be not more than four and a half inches deep. The four and a quarter inch figure was a serious misprint. The inside and outside measurements are the same. The standard comb honey super is four and three quarters inches deep and, although some large bee supply companies sell this as suitable for circular sections, it is not, because of the enormous amount of burr comb filled with honey that the bees put on top of the frames.

Two Queeners

Q. I read in an old *Bee Culture* how you had put two artificial swarms in one hive that was divided in the middle and then, using a queen excluder, supered over that. Did it work? Could you, instead, put two hives close together, queen excluders on each, super up above that with a half cover on each side of the stack of supers, and shake artificial swarms into each hive?

Iven Fairchild
Gary, SD

A. It worked, but it was not worth all the extra labor, and I have never tried it again. As for supering over a double hive, this, too, would not be worth the effort. You would get more honey by just treating them as two separate hives and supering in the usual way. The fallacy in these systems is to suppose that the more bees you can get into a hive, by whatever means, the more honey you will get. What you need is a high population of foragers compare to house bees, not just lots of bees.

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

ANSWERS!

Richard Taylor

Gleanings



JULY, 1993

ALL THE NEWS THAT FITS

EAS MEETS IN MAINE

The Eastern Apiculture Society will hold its annual summer short course, Master Beekeeper's School and meeting, at the University of Maine, in Orono, Maine the week of August 2-6, 1993.

The short course starts Monday morning and runs until Wednesday, noon, when the meeting proper begins.

Speakers this year include Dr. Eva Crane, John Ambrose, Steve Buchman, Nick Calderone, Lilia Ibay de Guzman (Student Award winner), David Dodge, Paul Jackson, Diana Sammataro, James E. Tew, and Gene Robinson (Hambleton Award winner).

A Wednesday evening reception, spouses tour and luncheon, lobster and clambake, blueberry harvest tour, and traditional Friday night banquet are all on the agenda.

There will be one hour workshops Thursday and Friday afternoon on honey cookery, requeening, smoker history, candlemaking, mite control, leaf-cutter bees, chunk honey, mead making, marketing, brood diseases, wintering and bear fence construction.



Gene Robinson

For information on registration, vacations in Maine or EAS, contact: Anthony Jadcak, ME Dept. of Agriculture Division of Plant Industry, Sta#28, Augusta, ME 94333 (207) 287-3891, or Loretta Surprenaut, EAS Secretary, Box 300A, County Home Rd., Essex, NY 12936 (518) 963-7593.



Tony Jadcak



Paul Jackson

ROTHENBUHLER LAB RECEIVES PLAQUE



Kim Flottum, (right) Publications Manager for the A.I. Root Co. presented the plaque to Dr. Brian Smith at the banquet with Dr. and Claire Rothenbuhler and many friends and associates present.

At the annual awards banquet held by the Entomology Department at The Ohio State University, in Columbus, OH, Dr. Brian Smith accepted a plaque to be placed in the Walter C. Rothenbuhler Honey Bee Research Lab.

The Lab was opened and dedicated several years ago but there was no formal nameplate or history placed inside for visitors unfamiliar with the building or Dr. Rothenbuhler.

To correct that, The A.I. Root Company, in cooperation with several friends and associates of Dr. and Claire Rothenbuhler designed a plaque to hang in the Lab.

Along with a photo of Dr.

Rothenbuhler, the following was inscribed:

Walter C. Rothenbuhler. A Pioneer In Behavioral Genetics. His Studies Of The Honey Bee Gave The World Some Of The First Clear Evidence That Behavior Is Regulated By Genes.

This Lab Looks To The Future.

It Continues His Strong Influence As Mentor For Students Who Will Be Apiculturists, Bee Researchers Or Who Will In Various Ways Utilize An Understanding Of Basic Biology Gained Here.

Tough on Tracheal Mites

YUGOSLAVIAN BEES RELEASED

Three honey bee breeders have been selected to propagate new Yugoslavian bees that have resistance to two damaging mites, the U.S. Department of Agriculture announced.

The Yugoslavian bees, *Apis mellifera carnica*, are the first insects that USDA's Agricultural Research Service has ever released for breeding, said Thomas F. Rinderer, who heads the agency's Honey Bee Breeding, Genetics and Physiology Laboratory in Baton Rouge, LA.

The three companies will maintain the Yugoslavian bee stock and sell breeder queens to queen producers, Rinderer said. The lab will send about 40 queens to each company - Hybri-Bees, Inc. of LaBelle, FL; Taber's Honey Bee Genetics of Vacaville, CA and John Klapac & Co. of Frederick, MD. They were selected by a Stock Release Panel comprised of ARS and industry representatives.

Rinderer said the three will rear breeder queens that can pass along resistance to varroa and tracheal mites. "These queens will be sold to queen breeders. We've already had more than 100 queen breeders express interest in buying them," Rinderer said.

The Yugoslavian bees - designated ARS-Y-C-1 have been under study since 1984 in a joint project between ARS scientists and researchers in the former Yugoslavia. The bees were first quarantined in this country in 1989 and later reared for field tests before being released to the three breeders.

The bees are twice as resistant



Thomas Rinderer

to varroa mites as susceptible domestic bees, but still require chemicals to control severe outbreaks, Rinderer said.

But the Yugoslavian bees are so resistant to tracheal mites that chemical controls for that pest probably would not be needed. He estimated that the resistant stock could save beekeepers \$2 per colony in tracheal mite treatments.

Three chemicals are registered to control the mites: menthol and amitraz for tracheal mites, and fluralinate for varroa. A fourth chemical, formic acid, is pending approval for use against both mites.

Queen breeders interested in buying breeder queens of the new stock can contact the companies at the following addresses:

Hybri-Bees, Inc., 471 N. Lee Street, LaBelle, FL 33935; Taber's Honey Bee Genetics, P.O. Box 1672, Vacaville, CA 95696; and John Klapac & Co., 5016 Shookstown Road, Frederick, MD 21702.

CANOLA SLOWDOWN

Canola oil popularity keeps growing among consumers, but you'd be hard-pressed to find similar enthusiasm on the part of farmers. Walter Schmidt, an Ohio State Univ. agronomist says the wave of interest farmers had in canola a few years ago has subsided. Consumer use of the low-saturated fat product keeps growing, 223% between 1987 and 1992. But a lack of market has tempered farmers' enthusiasm in this "hot" commodity. There just isn't enough crushing capacity in the U.S. to encourage local grain dealers to

offer premiums on canola. Eastern Corn Belt states such as OH can easily ship canola to Canada where there is still excess crushing capacity. But canola oil is unlikely to take much more than the 5% of the vegetable oils market it now holds until there's more crushed in the U.S. More crushing is unlikely until farmers start growing more. And farmers won't grow more until prices start reflecting demand. Until this Catch-22 shakes out, America will continue to import 97% of its canola oil needs, mostly from Canada.

AHB UPDATE

When an El Paso newspaper ran a story about the AHB being detected in Ciudad Juarez, Chihuahua it brought about media attention, also attention from other states and from the general public. Officials from the African Honey Bee Program in Mexico City stated that no official find has been made in that city and no sample has been received at their laboratory for official confirmation. I learned that a feral swarm was picked up within the city of Juarez after a day or two of placing and receiving calls. A sample was sent to the Fast Africanized Bee Identification System (FABIS) laboratory in the city of Chihuahua where it was identified as Africanized.

I have been informed by the Mexican National Coordinator for the AHB that the suspicious sample was sent to the Mexico City laboratory for confirmation on June 3, 1993. I will report the

findings as soon as I receive information.

Several stinging incidents were reported in the Rio Grande Valley during this period. A 10 year old child was treated and released from the hospital after receiving 20+ stings. This occurred when he was helping his father clear weeds from a field. There were two other separate incidents involving a horse and two dogs that were stung to death. They were unable to escape the bees as all three were tied when the stinging occurred. The owners were unable to release them because of the angered bees.

There are 52 quarantined counties in Texas with Williamson County being added at the end of February.

Of the 106 samples tested so far this season, 18, or 17% have been found to be Africanized.

From Elba Quintero
AHB Program Coordinator

Sooner, or Later

CANADA O.K.'S IMPORTS

The Canadian government has announced plans to end the ban on the importation of bees from the continental United States.

The decision follows an earlier move to allow the importation of bees from Hawaii.

Canada had barred the importation of U.S. bees from the United States after the discovery of varroa mite in the U.S. in 1967.

Federal Agriculture Minister Charles Mayer said bees would be allowed to be imported from the mainland U.S. under permits issued by Agriculture Canada.

The proposed regulatory change was published in the May 1 issue of the Canada Gazette. A period of 90 days was allowed to permit the public to review the changes to the regulations and to make any suggestions or concerns on the decision to the Animal Health Division of Agriculture Canada.

Meantime, the Canadian Honey Council has voted in favor of extending the U.S. bee import restrictions for a further two years.

Noting that varroa and tracheal mite infestations are restricted to a few areas along the U.S. border, votes at the council's annual meet-

ing favored the import ban being extended until Jan. 1, 1996.

The council did support the importation of queens from Hawaii under a protocol jointly developed by Agriculture Canada and the honey council.

The council also supported a plan by the Nova Scotia bee diversification to import Buckfast bee eggs and semen from England. It also supported a proposal to import genetic stock from the University of Guelph's breeding stock program being operated in New York state.

A proposal for a detailed review of the coordinated regulation of bee diseases between Canada and the continental U.S. was also supported. The review, to be completed by 1995, would involve representatives of the Canadian federal and provincial governments and the honey council.

The council voted to impress on Agriculture Canada the importance of retaining varroa as a named pest under the Federal Disease Protection Act and to ask the federal government to cover the costs of chemicals used to treat varroa.

BUCKEYES WIN AWARDS



Jim Beck (left), Jim Tew, Dave Heilman and Randy Nemitz of Ohio State University display the awards they recently received from Agricultural Communicators in Education (ACE) for their satellite TV course "Beekeeping: Exploring a Unique Industry."

The 16-part weekly series aired from September to December 1992 and reached some 400 people, many of whom viewed the program for university credit. The program covered a range of subjects, from bee biology to apicultural techniques, and included footage shot in Ohio, Texas, Arizona, Maryland and other states.

The show was broadcast by AG*SAT, a consortium of universities that provides agricultural education through satellite television.

Nemitz, who is based at the university's Ohio Agricultural Research and Development Center at Wooster, was the show's producers. Beck, also of

OARDC's Wooster campus, was associate producer.

Tew, an associate professor of entomology at OARDC's Wooster campus and the head of Ohio State's Extension Bee Laboratory, was the show's content specialist and "on-air talent" Heilman, an entomology lab demonstrator for Ohio State University Extension at Wooster, was technical consultant.

In the Electronic Media/Television category, "Beekeeping" won first place in class 18 - Instructional production for Credit and in class 19 - Educational production for Non-Credit. In the Information Technology category, the program took second place in class 37 - Innovative Use of Communication Technology.

The awards were presented May 8 at ACE's 1993 annual meeting in Miami.

For information about this course, call Jim Tew (216) 264-1124.

McKENNA IS WAS WINNER



Denis McKenna

The Western Apicultural Society is proud to announce that Denis McKenna of Fairview College, Alberta is the recipient of our 1993 Outstanding Service to Beekeeping Award. This award is presented annually to an individual who has demonstrated an unusually high level of service to

our industry, and Denis is a particularly deserving individual.

Denis worked in commercial beekeeping in the Peace River area for a number of years, eventually running his own bee outfit. In 1979 the Alberta government was looking for someone to head the development of a commercial beekeeping course at Fairview College. They chose Denis, and he's been there ever since.

He has been a leading figure in developing innovative management in northern Canadian beekeeping, particularly in such subjects as queen rearing and overwintering. He was instrumental in developing management techniques that allowed for stock self-sufficiency and improved wintering. He is an excellent speaker, and a most energetic and enthusiastic proponent of innovation and progress. He was awarded the 1991 Alberta Beekeepers Association Achievement Award for his valuable contributions to the beekeeping industry.

Farmers' Profits Down

FOOD COST UP

The farm value of a dollar spent for food in 1992 was 22 cents. Thirty-five cents of every dollar, the largest portion, went for food marketing labor costs. The third largest portion of the food dollar, eight cents, was spent on packaging. All other items were less than five cents each. The Consumer Price Index of food prices

shows an increase of 1.2% above those in 1991, the smallest increase since 1967. A variety of factors kept food price increases small, including lower inflation, slow growth in consumers' real income and low consumer confidence. Food spending was down particularly for high-value, high-priced products and restaurants.

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Pollen Problems

BIG BROTHER IS WATCHING

What sorts of advertising claims invite the critical interest of the Federal Trade Commission? An FTC bulletin titled "Law Enforcement Achievements and Ongoing Projects" offers a handy-dandy compilation of ads that prompted action by the commission during the period Oct. 1, 1989, through March 31, 1993. Among the FTC's targets: an anti-baldness product employing the impressive-sounding "Helsinki Formula"; another company

claiming to have cures for baldness and cellulite; yet another proffering cures for baldness and impotence; a marketer of bullet-proof vests claiming certification under government standards; a grapefruit marketer making health claims for the fruit; **weight-loss claims for bee pollen**; several fertility clinics making unsubstantiated success-rate claims; and a couple of marketers making claims for the efficacy of ultrasonic rodent-control devices.

SUNFLOWER NEWS

Reduced supplies and strong demand have tightened sunflower seed stocks this season. Fewer acres and an 8% yield drop trimmed THE estimate of total supply by 17%. Meanwhile, total sunflower oil demand is up 77% from just a couple of years ago, helped by a strong subsidy program for exports. Acreage will be up 12% in 1993-94. A normal yield would expand production by 26% and total supply by 9%. If USDA takes a less aggressive stance on subsidized oil exports next season, it may be hard to keep demand from slipping.

In response to recent higher prices, farmers are expected to plant nearly two and a half million acres to sunflowers this year, compared to 2.2 million acres last year. In the 1992/93 marketing year 2.3 billion pounds of sunflower seed will be processed to meet the growing demand for sunflower oil exports, which are estimated to total 558 million pounds this year. The action will draw down stocks and boost prices 12 percent above a year ago.

SUGAR PRICING

The General Accounting Office thinks Congress should move the sugar industry toward a more open market and away from federal subsidies. GAO recommends gradual lowering of the sugar loan rate to decrease market price. The program costs consumers billions, says GAO. Too few producers share too much of the price support pie: in 1991, 42% of benefits

went to 1% of sugarcane and sugarbeet growers. Seventeen sugarcane farmers got about half of all benefits. The sugarbeet industry is less concentrated—about 2,000 farms received half the beet grower benefits. High fructose corn syrup makers also benefit. They received an additional \$548 million a year from indirect program benefits.

NEW AT USDA

Secretary Espy broke ground at ceremonies for a new building at the Agricultural Research Center in Beltsville, MD. The \$10 million structure will house under one roof USDA's three major horticultural research laboratories. It is the first building to be built at the center in over 20 years.

**SEND
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NEWS
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GLEANINGS**

QUEENS FROM CANADA

Beekeepers on Canada's Prince Edward Island are on their way to becoming a major source of mite-free queens for North American honey producers.

A recent survey conducted by the P.E.I. Beekeepers Association and Agriculture Canada found the 2,184-square-mile island province to be free of both varroa and tracheal mites.

The P.E.I. bee industry now has 70 producers with 733 hives. The province has had regulations in place for a number of years preventing the importation of bees from anywhere except Australia and New Zealand.

This, together with the island's separation from the mainland by the Northumberland Strait—from nine to 30 miles wide—has prevented the introduction of varroa and tracheal mites.

Of the 70 P.E.I. apiarists, only 43 overwinter some of their bees. These producers were the focus of the varroa survey in the fall of last year. The other island apiarists buy packaged bees—certi-

fied mite-free—from New Zealand each year.

A tracheal mite survey also was conducted. All 733 hives were tested and not one mite was found.

At the moment the only beekeeper exporting queens—to New Brunswick—is Al Pickett, an islander who spent 22 years in the industry in Ontario, Alberta and Saskatchewan.

Pickett said his guess was that a significant queen exporting industry could be built up.

He sees a virtually unlimited potential for queen exports to the U.S. and mainland Canada.

"If I can raise enough, the market is definitely there," Pickett told *Bee Culture*. "I am growing as fast as I can, but government support isn't great."

"It will take some time and money and it will be slow going," he said.

In the meantime, he plans to continue his own program to develop queens with a strong resistance to disease and mites.

MARKETING INFO FOR HONEY SELLERS

While a shifting balance of power has yielded adversarial relationships between grocery retailers and manufacturers, it also has given rise to "partnering" efforts aimed at smoothing the contentiousness. Which sorts of partnering actually matter to supermarket executives? Meyers Research Center, based in New York, has addressed the matter in one of its TradeSmart Surveys, asking retailers about various aspects of their dealings with manufacturers. As you can see from the chart, cost-reduction programs won the most mentions from grocery retailers when asked to assess partnering efforts. But the

report added a caveat to this finding: "Equitable pricing practices and adequate support for brands were most often viewed as the *one* thing grocery retailers want most from a packaged-goods manufacturer."

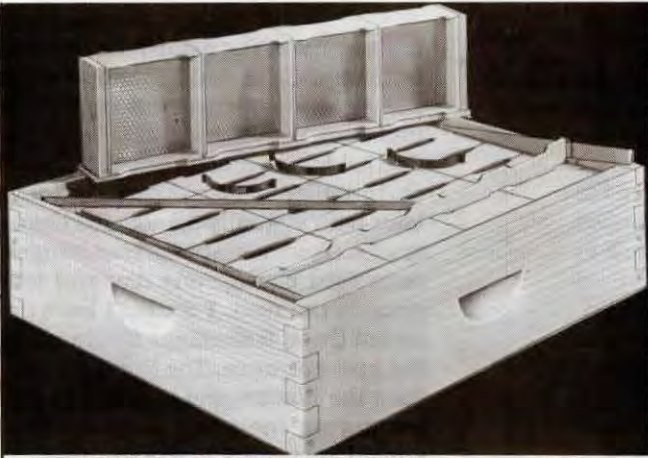
"Almost two-thirds of the retailers report that consumer demand for environmentally safe products and packaging has had some effect on the way they do business. Specifically, a large number of these concerned retailers indicate they give buying preference to items addressing environmental issues and prefer dealing with 'green' companies."

From AdWeek

WHAT MATTERS

The major elements of partnering relationships from a retailer's perspective included the following:

	% mentioning
Cost-reduction programs	25
Equitable deals and services from manufacturer	20
Mutual trust and honesty	20
Sharing of cost and sales information	15
Lowest possible prices, E.D.L.P. programs	15
Flexible, customized dealing	15



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Was I Suckered? I was talking to a neighbor about fruit trees.

"When I first moved into this area many years ago, I seldom saw a honey bee. Lots of bumble bees but few honey bees. Later I noticed many honey bees but in the last couple of years the honey bees are becoming scarce again," I said.

Anton said "I may have something to do with that" "I wanted to get my fruit trees pollinated so I started a couple of hives. I hoped my boys would get interested and start a honey-selling business in the neighborhood. But they didn't and I let the hives die out. If you'd like to start them up again, I'll give you my old equipment," he added.

"Do they take much time?", I asked.

"Do I have to extract the honey? I'm not interested in the honey," I said.

I don't remember what Anton answered but it must have been some kind of a con. When he showed up the next afternoon with a pile of grungy old boxes full of dry rot and frames full of wax moth frass, I put together enough to hive a package. Beekeepers will know where this long story is headed: I fell in love with the bees and now they are my major hobby. I'm always looking for an excuse to do something with them. I extract the honey, of course, but that is still the major nuisance of non-economic beekeeping.

Queenless, Sort Of I read that a person could be sure of the condition of the queen by watching bees at the entrance. If they were industriously bringing in pollen then a queen was in the hive, producing brood. This being the case one spring, I delayed inspecting the hive for a month. You guessed it: When I opened the hive there was no evidence there had ever been a queen in there.

Observation Hives You can imagine how keen it is to have an observation hive. This year I restocked mine with a queen and part of her swarm. In the process I got so many bees in the hive that I worried about swarming.

My solution opened up a whole new use for the observation hive. As soon as the bees had sealed the brood on one frame, I swapped it into my regular hive. By placing the frame, with clinging bees, near the wall of the hive there was no fighting.

I have swapped four frames of brood into my regular hive now and the fifth one is being capped. Since the brood is sealed, it won't require feeding so the new brood is a definite plus for the hive. Soon, though, I'll let the observation hive have the newly emerging bees to replace the original workers.

Pollen Needs Has anyone actually measured the amount of pollen a colony uses? When giving advice it seems reasonable to be on the safe side and recommend having plenty available. But my bees are driving me crazy by plugging the brood frames with pollen. The bees in my observation hive use very little pollen, as far as I can tell without sitting there all day counting incoming loads and comparing that with the amount accumulated in storage. I have resorted to using full area bottom pollen traps (Stauffer) in the extract mode on my hives and still wind up with too much unused pollen.

Hive Scale I'm trying to remember how I managed a hive before I put it on a scale. How did I know when to add another super? Was I continually opening the hive to look? This scale has revolutionized

my operation. The main thing I learned in the spring of 1992 was how short and separate the nectar flows were in this Seattle suburb: One 16-day period (which included a five-day pause) and another eight-day period 59 days later with virtually no surplus before or after. And how abrupt the changes; no weight change one day and four pounds the next. I couldn't have detected these transitions by watching the hive entrance. The bees were visiting the flowers and bringing in pollen during the entire period. I presumed they were bringing in nectar but I couldn't tell how much. Now I keep a log of the bloom status of various trees and shrubs and hope to find reference points to use in anticipating those flows.

Leave Bees Alone Some authors tell you to avoid frequent hive inspections and just leave the bees alone. Usually I feel constrained to go through the brood chamber every 10 days or so during the swarming season looking for queen cells. But now and then I practice leaving the bees alone. This year later inspection revealed that the queen was laying drone eggs (in worker cells) more than half the time and needed to be replaced. Another time I discovered a dead queen. I think when people say, "Leave the bees alone!" they mean leave them alone when everything is going all right.

Just For Fun

dan hendricks

BOTTOM BOARD

WHAT KIND OF BEE?



Honey Bee

Widely distributed in U.S., several races range from black to light yellow with stripe of dark brown/gold. Very hairy, pollen baskets on hind legs, most often seen near flowers. Not aggressive, often mistaken for yellow jackets or hornets. Social, living in man-made hive boxes or hollow trees. Transported for honey production or crop pollination. Very valuable.



Mud Dauber Wasps

Make nests of mud in organ-pipe shape. Solitary, in groups, they are slender, usually black, not large. Common around homes, porch ceilings and garages. Feed their young captured spiders. (Van Waters & Rogers Inc. ©)



Paper Wasps

Polistid wasps are usually brownish, long legged and common. Sometimes quite large, up to two inches long. Thin waisted. Nest is paper but open, not enclosed, attached by short stalk. Often seen around homes. Not aggressive, beneficial to gardeners.



Bumble bees, Carpenter bees, Digger bees, Cuckoo bees

Many related species in this group. Bumble bees are large, robust, black and yellow and very hairy. Social, they nest in the ground, often in tunnels or old mouse nests. Carpenter bees generally hairy and black nest in tunnels in joists or rafters. Some, like cuckoo bees, are bare and resemble wasps, usually reddish/brown or black with yellow. Not social or aggressive.



Yellow Jackets & Hornets

Both are social vespid wasps. The one-half to three-quarter inch adults feed their young chewed-up insects or other protein substitutes (hot dogs, hamburgers are favorites). Yellow Jackets are banded yellow and black. Bald faced hornets are mostly black with white markings. Nests are papery, usually high, sometimes underground. Beneficial to gardeners but very aggressive and can sting more than once.



(Van Waters & Rogers Inc. ©)



Syrphid Flies

Not a bee, but a fly. Large group, many are hairy and resemble bees, others bare and resemble wasps. Common around flowers, often seen hovering. Size varies from quite large with stout bodies to small with slender bodies. They do not sting or bite. Immature flies eat aphids.

Halictid Bees

Small, usually colorful bees. Metallic colors common. Solitary, nesting in ground tunnels, but may be many close together. Not aggressive, shy, but highly visible.



There are thousands of insects called 'bees', those most often encountered are shown here. Many are beneficial because they destroy pests destructive to food crops while just as many live hidden away, unseen and unknown. But a few are

very well known. They live around our homes, visit our flowers and sometimes cause discomfort.

Some, like yellow jackets and hornets should be avoided, while others, like the syrphid fly (not a bee at all), are harmless.

But of all these 'bees,' Honey Bees are by far the most common, most beneficial, and least dangerous. Do not confuse them with their ill-tempered cousins the wasps or hornets, or their lesser known relatives that only sometimes seem to threaten us.