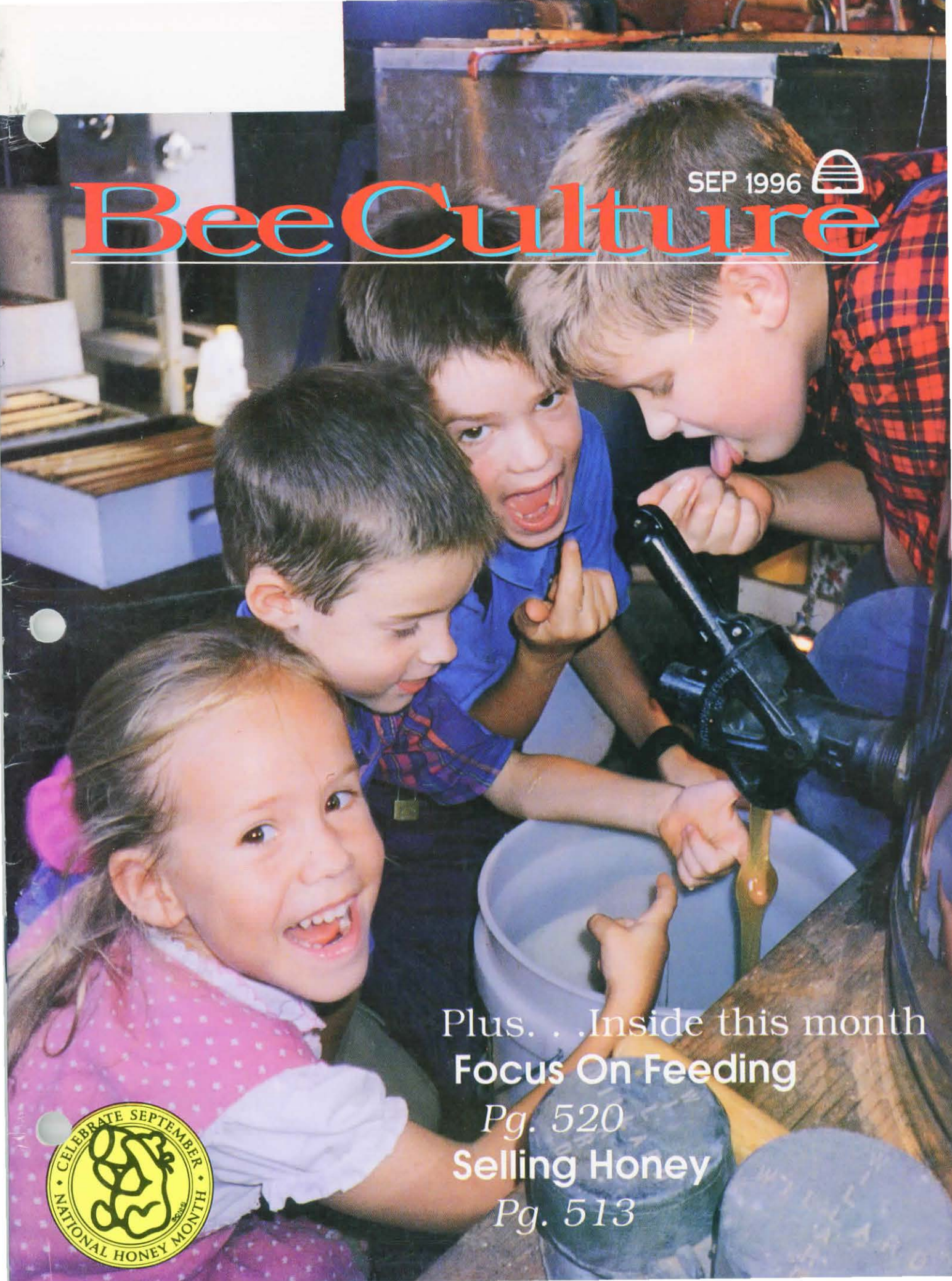
SEP 1996
BeeCulture
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CELEBRATE SEPTEMBER
NATIONAL HONEY MONTH

Bee Culture
THE MAGAZINE OF AMERICAN BEEKEEPING

SEPTEMBER 1996 VOLUME 124 NUMBER 9

FEATURES

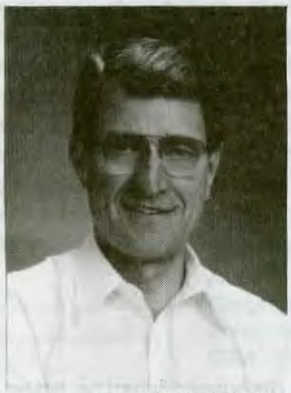
COVER
September is National Honey Month, but those who make honey, and those who one day may be honey makers need to be honored, too. There's no doubt, at least to us, that young people need as much exposure and experience in the art and science of bees and beekeeping, as possible. And a taste of honey, fresh from the extractor is a reward hard to beat. This month, show a child what our world is like. You'll both be better for the time, and taste.
photo by Robert Becker

FOCUS ON FEEDING

DEPARTMENTS

COLUMNS

Honey Festivals, Pg. 515



JOHN ROOT
Publisher

KIM FLOTTUM
Editor

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INNER COVER

The annual EAS bash was in Harrisonburg, Virginia last month and I got to be a bit more involved with the people and events than last year. One of my favorite activities at a meeting like this is to find out what people are thinking, and maybe, see why they think the way they do. Some of what you hear is heard year in and year out, but some this year was new to me – and maybe you.

•

Lots of problems with queens this year. Drone layers were real common – real, real common. Supercedures after a couple of weeks of apparent good laying happened, too. Either unmated or poorly mated queens seemed to blame, but that's not certain. On a related note, many of those who practiced their own queen rearing had similar problems, but not, according to them, due to the poor weather suffered in the south. Rather, they say, because of the lack of both feral and managed colonies generally everywhere, there's a corresponding lack of drones for their queens to mate with.

As a result of both of these situations a lot of colonies got off to a rather slow start. At least that's what most people seemed to think. It didn't look good.

•

Another popular topic at the breaks and meals and walks between sessions – everybody seems to be making honey this year, in spite of what we just discussed. They have fewer colonies and fewer bees, but there's more honey in the boxes.

"Go figure," is the most common response. But there's actually something here more than a shrug and a 'go figure.' Even with the less-than-perfect weather, the bees that are foraging are finding loads and loads and loads of good stuff to bring home. Because there are fewer bees, honey bees that is, out there foraging, flowers visited usually haven't been visited before so there's more nectar in those flowers to bring home. It's no wonder.

•

But, someone said, "without all those honey bees, aren't the solitary bees doing better?" Actually they probably did, but we won't see the results till next year, so they didn't have much effect *this* Spring. But, with increased forage available those solitary bees were able to, according to some experts, produce more than normal brood for next year. And, because of the suddenness of the bee loss, those tiny parasites that create havoc for solitary bees haven't had time to produce in excess, yet. (Yes, solitary bees have their problems, too. Alkali bees, raised commercially have had significant problems with pests and predators and parasites. And bumblebees have their own tracheal mites and other nasties to contend with, too.) So, at least next Spring should see some increased activity in that arena. Time will tell.

•

Another topic commonly discussed was the price of honey. Of course this subject has come up in places other than EAS.

"What will the market bear?", is the question on everybody's mind. A good question, with a not-so-clear answer.

There seems to be a consensus among some producers, and some packers, that, at least at the wholesale level, the $1.00/lb. price is the ceiling, not the beginning of the better-price-for-honey price. But 'wholesale' has many meanings, depending . . . Selling 60's to a bakery is both 'wholesale' and 'retail'. Selling cases of one-pounders is wholesale, right? Well, not always. Drums to a packer is definitely 'wholesale', while a quart jar at work is definitely 'retail', or is it?

Anyway, you see the confusion. It seems there will be only an average crop in the U.S. – in the 200-210 million pound range – so supplies will be, well, rather thin again. Imports

Continued on Page 530

Conversations

Reader Assistance

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MAILBOX

What's Going On?

I have been raising honey bees for about 20 years in a small way – about 10 hives.

But I have come to the conclusion I know less today than I did the first year when I started with two hives of honey bees.

The last two years I would buy six swarms with the queen marked and clipped. I would look in the hive about six weeks later and there would be fewer bees and no eggs and no queens.

This last year I bought 5# of honey bees instead of 3# of bees and the same thing happened – no eggs and no queen. So far this year I have lost four out of six swarms. What is happening to the queens?

Ralph Houtaling
Corning, NY

Attacking Purple Martins

I wonder if you or your readers have heard accounts of bees attacking purple martins. I began beekeeping in the Spring of 1995 and located my one hive about 25 feet from a single purple martin apartment that rose about 15-20 feet above the level of the hive. I observed no interaction between the bees and martins that year. This spring I collected a swarm from the original hive and started a second colony next to the first.

About two months after the martins arrived I occasionally noticed aggressive behavior by the bees toward the birds. The common scene was a martin returning from high in the sky to the apartment with one or more bees appearing seemingly out of nowhere to chase it into the nest over the last 20 feet. Then the bees would rapidly dance around the apartment for a while, either "picking up" another martin or leaving if there were no more birds. Never did I observe martins feeding on bees. Then one afternoon when there were no adult martins about I saw a large number of bees around the apartment. I thought at first that a swarm was trying to locate in the apartment, but I climbed a ladder and instead observed a killing spree by the bees against the newly hatched baby martins. Some baby birds had up to six bees stinging them simultaneously! I smoked the bees away as best I could and eventually moved the apartment 60 feet to the other side of my yard. For a couple days the bees still buzzed the apartment and arriving birds but that behavior eventually stopped.

So I wonder how common this behavior is and what might have prompted it. None of this occurred last year despite the bees and birds being as close together. I observed no martins feeding on bees, and yet the bees apparently took unkindly to their neighbors this year. One had the impression that bees were posted as sentries to attack martins on their return (like mockingbirds chasing crows). Might the odor of the martin feces or the sound of baby birds' chirping been a stimulus? I should add that the bees are rather docile otherwise, do not arouse when I harvest the honey, and are quite good producers. Too, there have been no reports of Africanized bees in the area, and I know where these queens came from.

There's my story. I look forward to replys. Thanks.

Charles Woernle
Montgomery, AL

Feral Survival/Lessons Learned

I just inspected a feral hive that has survived the hundred year drought in fine form, and decided to share a few of its lessons with your readers.

Five comb centers were spaced inside of five and one-eighth inches. The comb that had the drones was spaced on a 1.25 inch center, away from the heart of the hive since drones are raised in times of plenty! Cell size was close to old world standard, and the combs were built so as to shelter the bees from the outside air.

Continued on Next Page

MAILBOX

In light of this, the Hoffman frames, with their one and one sixteenth inch top bars, and one and three eighth inch end bars would seem inadequate for growing bees. Frame centers should be somewhere between one, and one and one eighth inches.

As for cell size, it is a bit unclear exactly what the size should be, but there is no doubt that comb size has gotten too large in this country. A South American study showed the reproductive success of *Varroa* mites in worker brood in smaller comb to be about half what it is in larger comb. Between this and the advantage of having more cells, and thus more brood covered by the cluster, the gain may be considerable.

Lastly, frames in most beekeeper's hives act as fins in funneling outside air to the cluster. Every feral hive I can remember built the combs crosswise to the entrance, not parallel to it. The frames should be as baffles to the entrance so that bees can better control unfriendly drafts.

These are some pretty basic things, and ones which, if we ignore them, will rightly give us empty boxes, a higher sugar bill, and a smaller crop. If we want self-spacing frames, then 1 and 1/8" width end bars will be more than adequate, with top bars of no more than 7/8". I feel that the extra eighth of an inch may be needed for strength and because of the lack of uniformity in moveable combs. We can't make our manufactured combs as good for bees as the ones they make for themselves, but it would be foolish to rob the bee tree and not notice what a good thing the bees have going there.

In the honey supers, do whatever suits you, but in the brood chamber, do what's good for bees, and consider the honey super that might end up a brood chamber. Mary Poppins was either wrong or else not aiming at the center of the target when she said that enough is as good as a feast. Enough is better than a feast. Let it be so for comb, frames, and bees. Outs is an industry that needs to start moving more bees – and less wood – when combs are handled.

Ed Stockwell
Arizona

Research Lab Among Best

The Carl Hayden Bee Research Laboratory was named by the computer industry as having one of the top Internet World-Wide Web sites. A site is where computer users who are connected to an international network of computers can visit and obtain information. This U.S. Department of Agriculture laboratory is located in Tucson, AZ and is part of the department's Agricultural Research Service.

The lab's site contains basic information on bees for use in school classes as well as the latest research findings for use by other scientists. "This ever-changing site is a favorite among computer users – we average more than 3,000 connections each day. The site will soon offer BEECAM – a live broadcast of bees inside one of the lab's hives," said Gloria DeGrandi-Hoffman, ARS entomologist in Tucson.

"Mark Templin, a student at the University of Arizona and part-time ARS employee, played a key

MAILBOX

role in its design and development. He also built a computer model that will explain to beekeepers the best ways to make a profit," adds Hoffman. "Mark is a real go-getter and inspired us to get on-line with our site."

This site was rated as a "4-Star" site by the McKinley Group's professional editorial team. This is the highest rating a site can achieve in Magellan, McKinley's comprehensive Internet directory of more than 1.5 million sites and 40,000 reviews. Three primary factors determine ratings – depth of content, ease of exploration and appeal. The bee lab also was honored by other companies and received the USDA Secretary's Award for Public Service.

The site was developed by Templin, DeGrandi-Hoffman and fellow entomologist Stephen L. Buchmann.

Computer users on the Internet can visit the site at "http://gears.tucson.ars.ag.gov/".

For information, contact Gloria DeGrandi-Hoffman, Carl Hayden Bee Research Center, Agricultural Research Service, USDA, Tucson, AZ 85719. Phone (520) 670-6481.

Dennis Senft
Albany, CA

Lightning Strikes

On July 17, 1996 a thunderstorm moved through our area and a bolt of lightning struck one of my beehives. Besides equipment damage, there was a loss of about two pounds of bees. I was able to transfer brood nest to other equipment. The colony has seemed to have reestablished itself but no doubt my surplus crop will be smaller. This colony was in a row of 12 and adjacent to an elm tree. After 60 years with the bees this is a first time experience for me.

Ernest Holtz
Rockford, IL

Amazing Queen

When Danny Weaver was requeening during the Spring rush he hurriedly put an extra Buckfast queen in his jeans pocket. The Buckfast are known for their hardiness, but this royal lady surpassed all expectations. When Danny returned home from work (very late I might add) I dutifully put his dirty work clothes into the washing machine. When I wash his work clothes I always add extra detergent. All this time I did not know about the lonely Buckfast queen in a little screen cage deep down in Danny's jeans pocket. I started the load of clothes and went on about the evening. After Danny left for work the next morning I went to the washer to change his clothes over to the dryer. Immediately I saw the queen cage. "Poor queen," I said to myself. But as I lifted up the cage I saw she had survived! This Buckfast queen lived through the wash, rinse, and spin cycles with extra detergent. Plus the queen candy had washed away so there was a hole in the cage along with just a screen on one side. We gave her a new cage, put her in a storage hive, and used her to requeen with later the same week.

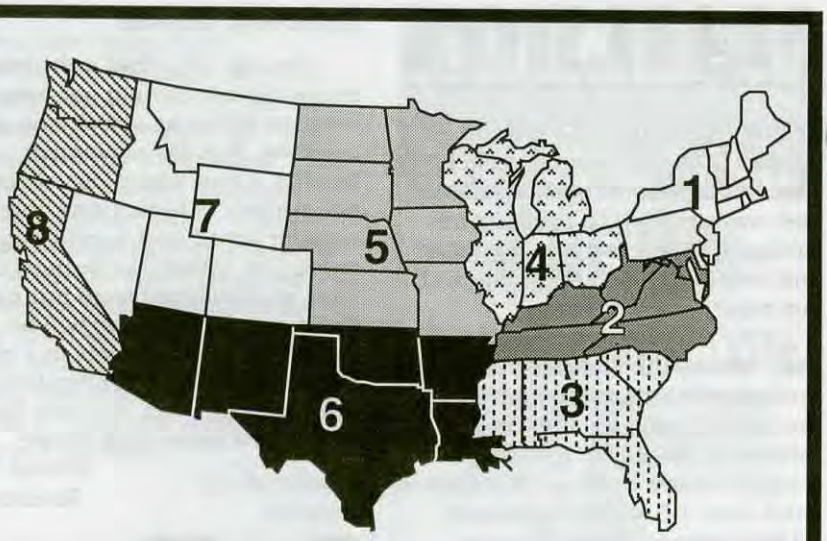
Laura Weaver
Navasota, TX

SEPTEMBER Honey Report

SEPTEMBER 1, 1996

REPORT FEATURES

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



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60# Light	69.40	65.63	63.00	69.40	65.51	47.00	65.51	63.33	47.00-84.00	65.52	58.57	46.45
60# Amber	62.31	59.00	61.00	69.85	65.00	49.50	64.42	63.33	44.00-87.00	62.26	56.71	42.82
55 gal. Light	0.86	0.88	0.93	1.00	1.00	0.75	0.90	0.79	0.55-1.23	0.92	0.88	0.60
55 gal. Amber	0.79	0.73	0.89	0.88	0.82	0.80	0.82	0.78	0.55-1.08	0.84	0.86	0.56
Wholesale - Case Lots												
1/2# 24's	28.21	39.33	23.95	26.28	34.93	25.50	34.93	25.10	22.00-54.00	28.78	27.17	23.62
1# 24's	36.67	38.85	39.10	39.24	42.00	36.00	38.07	34.80	30.00-45.90	38.30	38.25	31.89
2# 12's	32.62	36.68	36.05	32.36	36.00	30.00	34.67	30.00	27.44-42.40	34.18	34.73	29.58
12 oz. Plas. 24's	32.17	33.43	35.00	34.29	31.20	36.00	34.81	28.33	25.00-45.90	33.52	34.28	27.68
5# 6's	34.94	38.50	36.00	37.19	36.98	32.50	36.98	31.25	28.00-45.95	36.99	35.52	31.32
Retail Honey Prices												
1/2#	1.69	2.20	1.75	2.17	1.19	2.45	2.83	1.69	0.75-3.59	1.73	1.77	1.49
12 oz. Plastic	2.03	2.12	2.46	2.04	1.80	2.40	2.16	1.96	1.61-2.75	2.11	2.07	1.67
1 lb. Glass	2.42	2.52	2.81	2.45	2.26	2.67	2.62	2.25	1.88-3.50	2.49	2.50	1.92
2 lb. Glass	4.21	4.39	4.77	4.32	3.98	3.50	5.09	3.68	3.50-7.49	4.28	4.02	3.17
3 lb. Glass	5.08	5.81	5.23	5.48	5.17	5.00	5.44	5.06	4.50-6.50	5.33	5.08	4.40
4 lb. Glass	6.38	6.00	6.50	8.25	7.15	6.25	7.15	7.99	5.99-8.50	6.97	6.98	5.34
5 lb. Glass	8.12	8.33	7.50	9.77	9.05	7.75	9.05	7.24	5.99-12.70	8.47	8.34	6.93
1# Cream	2.75	3.16	2.93	2.46	2.28	4.00	2.89	2.42	1.79-4.00	2.89	3.02	2.33
1# Comb	3.59	3.55	3.50	4.31	2.50	4.45	3.60	3.25	1.95-5.00	3.86	3.65	3.56
Round Plastic	3.23	3.75	4.00	3.17	3.42	4.25	3.42	3.42	2.50-4.25	3.50	3.31	3.40
Wax (Light)	2.41	2.08	2.42	2.63	2.25	2.50	2.64	2.50	1.50-3.95	2.48	2.29	1.63
Wax (Dark)	2.03	1.79	1.88	2.38	2.20	1.88	2.20	2.25	1.25-3.25	2.11	1.97	1.35
Poll. Fee/Col.	30.21	30.00	31.67	32.50	32.58	11.00	35.00	30.33	11.00-55.00	31.75	33.79	31.00

MARKET SHARE

For those in local markets selling retail this year more than ever is the time to stress "locally produced." It's a provocative hook, and smart sellers are pushing it hard. Wholesalers, on the other hand are learning to negotiate price all over – from the driver's seat, primarily. Do you push packers hard for price, or soften a bit and keep imports to a minimum?

Region 1

Prices up a bit since last month. Supplies increasing as harvest gears up. Common sources include clovers, locust, tulip poplar, knapweed, blueberry (ME), and basswood. About an average to a bit above crop. Mites causing few problems, except in some areas.

Region 2

Prices steady to up a little, demand only steady. Common sources – locust, clover, blackberries, tulip poplar, sourwood, sumac, redbud. An average sized crop this season, with few mite problems.

Region 3

Prices steady to up a bit at retail, with demand steady to increasing, especially for new (and limited) crop. Citrus, palmetto and cabbage palmetto predominant crops so far. Treated colonies doing O.K. so far.

Region 4

Prices about steady both retail and wholesale and demand steady, but increasing as new crop comes in. Main sources include clover, basswood, locust, loosestrife. An average crop overall, but some spots exceptional. Colonies in good condition so far with mite loads low.

Region 5

Prices climbing both wholesale and retail, with demand stable to increasing a bit. Sources include sweet clover, alfalfa, sunflowers, alsike, basswood and some soybean. Sales expected to stay steady. Colonies generally O.K., but some problems areas are hurting and can't solve the problem.

Region 6

Prices decreasing a bit at wholesale, primarily due to lower prices in desert southwest. The rest of the region steady. Demand steady to increasing a bit. Average crop so far, but some areas still below due to early drought. Colony conditions O.K., but mite treatments starting. Local crops include tallow, cotton, mesquite.

Region 7

Prices and demand steady, but it's been a difficult year with early droughts, pesticide problems and late crops. Average to below average crops generally, with irrigated areas high, but others lower than usual.

Region 8

Prices steady, demand steady with slightly above average crop. Some areas reporting higher than average crops though due to excellent weather. Sources include locust, alfalfa, star thistle, clover, sage, colonies generally in good condition but mites present in treatable numbers in most places.

Roger Morse

Research Review

"The narrow genetic base (of Varroa) means that the chances of fluvalinate-resistant mites developing are reduced."

The *Varroa* mites in Europe are different from the *Varroa* mites in the United States. If *Varroa* mites from Europe were introduced here, purposely or accidentally, they would cross with our *Varroa* mites and the result could be hybrid vigor that could be disastrous.

The fact that the *Varroa* mites in Europe and North America are different in at least one regard was determined by morphometrics. This is the science that involves measuring and comparing the size of body parts. According to morphometrics, the *Varroa* mites in the United States came to us from South America. The source of the South American *Varroa* was Japan.

The source of the European *Varroa*, on the other hand, was two introductions of *Varroa* mite-infested Apis cerana, the small Indian honey bee, into Germany in 1966 and 1968 and a third introduction from the Ukraine. The first mites in Germany came from Sri Lanka, the large island that lies off the tip of southern India. These mites mixed with the *Varroa* mites that infested the Ukraine. The source of the Ukrainian mites is presumably the Vladivostock area, that part of the old Soviet Union that lies east of China.

At least three facts are important in discussing this issue. First, and most important, we must continue to guard against importing *live* honey bees from Europe that might be infested with mites. The honey bee act of 1922, which prohibits the importation of honey bees into the United States is as important today as it ever was. More on that below.

Second is the fact that the *Varroa* in the United States have what we call a narrow genetic base. This is because our present knowledge indicates there was only one introduction of the mites into this country. United States *Varroa* mites are more inbred than are the *Varroa* in Europe. This means that we use miticides in a different manner than is done in Europe. Where there is a narrow genetic base you may use more miticide without a greater danger of building resistance such as is being reported from Italy recently.

The third important point is that since the European and U.S. mites are slightly different we must be wary in applying European research to our situation. In general terms, the mites are the same but we must be on guard for slight variations; the best example is worrying about developing resistance to Apistan such as is apparently taking place in Europe.

I wrote about how you treat insects or mites with a narrow genetic base differently from the way you treat pests when you have a broad genetic base in the January, 1996 issue of Bee Culture.

The important point is that the chances of developing resistance to Apistan (active ingredient fluvalinate) are *less* when heavier doses are used when you have a narrow genetic base. Many people have been writing that we should guard against overdosing with Apistan since it could lead to the development of resistant mites more quickly. This is not true according to the best information I read on how insects and mites respond to pesticides.

The honey bee act of 1922 is still valid

In 1922 the United States enacted the federal honey bee act, which I mentioned above, that prohibits the importation of honey bee stock from abroad except under very specific conditions. This legislation was enacted to protect our industry against the tracheal mite that had been discovered in Great Britain a few years earleir. Canada enacted similar legislation. These laws served the United States and Canadian beekeeping industries very well and it was not until 1984 that tracheal mites found their way into this country from Mexico. However, just because both Europe and the North America have both tracheal and *Varroa* mites does not mean that they are the same.

What is also important is that there is a legal route thorough which honey bee semen may be imported into this country through APHIS (Animal and Plant Health Inspection Service of the U. S. Department of Agriculture). The semen must be imported for experimental purposes but by working with the U. S. Department of Agriculture Bee Research Laboratories successful importations have been made that have enhanced both research and have had commercial application. BC

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? DO YOU KNOW ?

All About Honey Plants, and The Honey They Produce

Clarence Collison

There are three key components to honey production: 1) colony strength; 2) weather conditions conducive to flowering, pollen and nectar production, and foraging; and 3) abundant floral sources. It is important for the beekeeper to know what plants are in the area, when they bloom, whether they supply nectar, pollen or both, and how abundant and dependable they are. This information is of value in making colony management decisions. It is also important for the beekeeper to know the characteristics and qualities of the honey produced from the various floral sources in the area, especially if special handling or processing techniques are needed.

How well do you know your floral sources, honey characteristics, and processing techniques? Please take a few minutes and answer the following questions to determine how well you understand these topics.

The first eight questions are true or 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. ___ American basswood or linden trees are a dependable source of honey every year.
2. ___ Almonds, like citrus, produce large quantities of premium quality honey.
3. ___ Corn produces large quantities of pollen which is frequently collected by honey bees.
4. ___ Purple loosestrife produces a greenish honey with a fair to good flavor and is commonly found in wet, swampy areas.
5. ___ Alfalfa is an excellent source of nectar and pollen.
6. ___ Maples and oaks produce large quantities of pollen and nectar early in the spring that are used by the colonies for spring buildup.
7. ___ Heather honey exhibits a distinctive property known as thixotropy.
8. ___ Honey should not come in contact with copper, brass, galvanized iron, aluminum or iron.

Multiple Choice Questions (1 point each).

9. ___ Produces dark amber honey.
   A. Golden Rod
   B. Sweet Clover
   C. Sourwood
   D. Buckwheat
   E. Sunflower
10. ___ Heating honey to 155¡ F. for ___ minute(s) will kill the yeast that cause fermentation.
    A. 470
    B. 1
    C. 60
    D. 30
    E. 22
11. ___ Produces large quantities of dark red honey.
    A. Tulip poplar
    B. Soybeans
    C. Crimson Clover
    D. Purple Loosestrife
    E. Mesquite
12. What is the primary limiting factor in the production of cotton honey? (1 point).
13. What is an unusual characteristic of either California sage or tupelo honey? (1 point).
14. What are the advantages and disadvantages of using stainless steel in honey processing equipment? (4 points).

Please match the following floral sources with the appropriate description.

A) Mesquite B) Willow C) Saw Palmento D) Fireweed or Willow Herb
E) Golden Rod F) Yellow Star Thistle G) Milkweed
H) Aster

15. ___ Low growing little palm, found on dry soils in the Gulf Coast region.
16. ___ Annual herbs approximately 1 foot high with yellow composite heads, chiefly of value in California where it produces a white or extra light amber honey.
17. ___ Shrubs or trees with catkins of yellowish flowers in spring, the male and female flower clusters are on different trees.
18. ___ Blossoms are borne in large ball-shaped clusters and bees at times become entangled in the pollen masses (pollinia).
19. ___ Small, shrubby trees found in the drier regions of North America, producing large quantities of light amber, well flavored honey.
20. ___ Widely distributed native plant with large, yellow compound flower clusters, producing large quantities of nectar and pollen in the fall.
21. ___ Perennial herbs with large numbers of composite heads that are white, blue or purple, that bloom late in the fall, producing large quantities of nectar which the bees may have difficulty in getting fully ripened.
22. ___ A tall herb with large clusters of red-purple flowers, growing in dense stands in the far north, producing large quantities of extra white honey with a mild flavor, in late summer.

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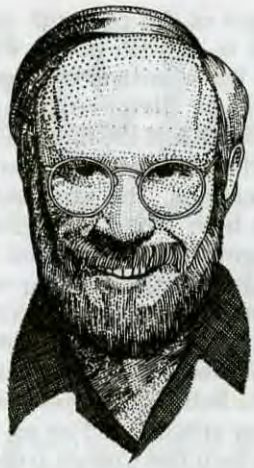

Mark Winston

Behavioral Ecology

"The subject of relevance is always on my mind, but the comment by the Editor caught my attention."

Science moves forward in fits and starts, with periods of stagnation followed by bursts of new findings. This creates the bandwagon effect, where a new approach is eagerly embraced by the up and coming younger generation of scientists. New scientific fads come along regularly, and either die out if they prove to lack substance or grow and prosper if they provide new knowledge and technical advances.

The field of Behavioral Ecology is one such fad that has stayed around for about 20 years. It began in the 1970's, at a time when many biologists were becoming frustrated with the separated fields of behavior and ecology. Animal behavior had become too laboratory-oriented and "psychological" in approach for the young rebels, who wanted to study behavior in the field. Ecology had become isolated from the behavior of animals that live in the real world, focussing on community structure and species diversity more than on interactive questions about behavior and evolution under different ecological regimes. The new field of Behavioral Ecology was born to bridge this gap by studying how animals behave in nature.

Behavioral Ecology is on my mind this month because of a comment made by our *Bee Culture* editor, Kim Flottum, in his March Inner Cover column. He wrote about an article concerning how bees regulate pollen foraging, published in Behavioral Ecology and Sociobiology, the flagship journal of this field. Kim was interested in this article because it might provide information useful for the management of commercial pollen collection, but he was disappointed because, as he put it, "This is the type of research a scientist conducted for his/her own gain as far as I'm concerned."

The subject of relevance in scientific research is always on my mind, but this comment by Kim especially caught my attention because my students and I often publish our more basic research in Behavioral Ecology and Sociobiology. In fact, we did publish an article in that journal in 1992 on pollen regulation, although I have no idea if this was the article Kim was referring to. However, you'll understand why Kim's point caught my attention if you read my column here last month. You may recall that I was feeling guilty about our writing in basic scientific journals, because we rarely discuss the applications of our research in those journals.

Just for fun, I dug out our 1992 pollen foraging article. This research was conducted and the article written by Jennifer Fewell, who at that time was a Postdoctoral Fellow in my laboratory and is now an Assistant Professor at Arizona State University. If Kim or any beekeeper had read this article, I could see where the concerns about relevance would have come from, even right from the first line of the summary, which said "To place social insect foraging behavior within an evolutionary context, it is necessary to establish relationships between individual foraging decisions and parameters influencing colony fitness." It would be a real stretch to believe that a beekeeper reading that introductory line would find relevance for beekeeping in it, or even that he or she would continue to read on to even the next line.

Nevertheless, this article had some significance for bee management, and did provide basic information that should lead to improved income for beekeepers. I admit that a beekeeper reading the entire article might not exactly have seen dollar signs jumping out from the page, but that was a problem only because we didn't write the article for beekeepers. Rather, it was written in the style and jargon of Behavioral Ecology, a dense thicket of buzzwords, assumptions, and shared paradigms that is easily traversed by those in the field but is almost impenetrable by outsiders.

The research reported on in this study used two groups of colonies that were identical in every way except for the amount of stored pollen they contained. We equalized brood areas, adult populations, honey, etc., but manipulated colonies so that one group contained a high amount of stored pollen, about three full frames, while the other group had a low amount of stored pollen, about one eighth of a frame. Then, we examined foraging from colonies in the high and low groups, particularly total numbers of foragers, proportion of bees foraging for pollen, and pollen load size.

The results were clear, and dramatic. While the total number of foragers was not different between the high and low pollen colonies, the proportion of foragers returning with pollen was much higher in the colonies that had low pollen stores. In addition, the workers from the low pollen colonies returned with larger pollen loads than those from colonies with

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"Beekeepers could perform this manipulation prior to moving bees to a crop for pollination, and charge higher pollination fees for these superior units."

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high pollen stores. They also made shorter trips and spent less time in the colony between trips. All of these data indicated that foragers from colonies with low levels of stored pollen put much more effort into pollen foraging than workers from colonies with high levels of pollen storage.

The interpretation of these results depends on whether you're a behavioral ecologist or a beekeeper. We published this article in a Behavioral Ecology journal, and so our discussion of these results focussed on questions of interest to scientists in that field. We treated pollen as a "currency," and discussed the results in terms of "strategies" and "fitness." For example, the last part of the article stated that "Despite its importance as a food commodity, pollen has traditionally been overlooked in foraging models addressing fitness questions. Our findings that 1) pollen foraging activity is tightly regulated, and 2) pollen stores have a measurable relationship with fitness variables, suggest that models of the evolution of foraging in social insects can be greatly enhanced by consideration of non-caloric foraging rewards such as nitrogen."

This dense, jargon-ridden ending masked an important implication of this study for beekeeping. Put more clearly, we found that workers from colonies that had pollen removed would collect more pollen. These colonies would be better pollination units, because workers foraging for pollen are more effective at pollinating most crops than workers foraging primarily for nectar. Thus, beekeepers could perform this manipulation prior to moving bees to a crop for pollination, and charge higher pollination fees for these superior units.

I'm sure that last line about higher fees caught your attention as beekeepers, where academic phrases about fitness left you cold. Same study put into a management context, and suddenly you're interested. Indeed, I talk about this study often to beekeeping groups, because rental fees for pollinating colonies are set much too low. The kind of manipulation we studied in our Behavioral Ecology and Sociobiology article provides a rationale for beekeepers to add value to pollination units, making more income. A beekeeper performing this manipulation should be charging at least $10-15 more for that unit, and at that the grower is getting a good deal. The only extra cost to the beekeeper is five or ten minutes of work to remove a few pollen frames from each colony, which provides an excellent financial return for the labor.

Our article was not the only pollen foraging article published in Behavioral Ecology and Sociobiology that could be criticized for its apparent lack of relevance to beekeeping. For example, Scott Camazine, formerly a graduate student at Cornell University and now an Assistant Professor at Pennsylvania State University, published an article in 1993 demonstrating that worker bees are not responding directly to the colony's level of pollen reserve. Rather, workers likely perceive stored pollen levels through interactions with nurse bees in which food is exchanged. Camazine's article was similar to ours in being pitched to the behavioral ecologist audience, and is tough slogging for beekeepers. However, his article also was similar to ours in having interesting potential applications. For example, if we could determine the chemical cues being passed between nurse bees and potential pollen foragers, we would be able to use synthetic versions of bee-produced substances to stimulate pollen collection, again increasing the pollination fee charged for those colonies.

Thus, Kim's complaint about the journal Behavioral Ecology and Sociobiology has little to do with the substance of the research reported and alot to do with how it was presented. We scientists can speak in two tongues, the obscure jargon of basic science and the more easily understood and directly relevant style of applications. The work we do often has both levels of interest, the fundamental and the applied, but we keep them separate in our writing. Quite frankly, university faculty prefer to publish in the academic journals, because we get promotions and tenure for Behavioral Ecology and Sociobiology articles, and we get no recognition for a *Bee Culture* article from our colleagues, Chairs of our Departments, and Deans of our Faculties.

I staunchly defend the Fewell and Camazine research. While they are fundamental science, they have interesting applications, and commercial relevance. However, I question our academic system that pushes these fine young scientists to publish work in a way that only other academics can understand, and ignores or even discredits the flip side of basic research, the management implications.

Perhaps we should start a new journal in this field, and call it Behavioral Ecology and **Management**. Manuscripts submitted to this journal would have to include the basic perspective and the applications in the same article, and be written in a jargon-free fashion so that anyone could understand it. Reviewers for this new journal would include scientists, representatives of relevant industries, and people randomly chosen from the phone book. Finally, publications in this new journal would become the most highly prized citation in a faculty member's curriculum vitae, and lead to rapid promotion and tenure.

Maybe it's time for a new bandwagon, the marriage of basic and applied science, and mutual respect between the disciplines. This new fad would have simple, clear writing as its trademark, and broad relevance its only mandate. And to start it off, I suggest the two editors of *Bee Culture* and Behavioral Ecology and Sociobiology hold a summit meeting, and agree to publish a joint trial issue together. Who knows; it could be the start of something wonderful. BC

Mark Winston is a professor and researcher at Simon Fraser University Burnaby, B.C. Canada.

SELLING HONEY

Linda Batt

10 Easy Ways To Sell Only A Few Hundred Pounds Every Year.

When my husband decided to keep bees, I remember my very first reaction: A cellar full of honey, I'm going to have a cellar full of honey and no way to get rid of it. "Just make sure you give all the sticky stuff away," I told my mate. Then I got wind of how much he was spending on supers, hive tools, extractors and I modified my statement. "Just make sure you sell all the sticky stuff," was my amended request.

The honey sold so well that last fall I asked for a jar for my kitchen shelf. "You said to sell it. We sold every ounce," my beekeeper reported. I ended up buying some from another local farmer. Between the first production and repeated sell out crops we have learned a lot about marketing in general and picked up additional techniques to push our particular product, but we began as complete novices.

When Don started out to sell his first crop of honey, he had several decisions to make. One important consideration was the look of the product. He thumbed through catalogs to see honey containers and found various shaped and sized jars and plastic bear bottles. He finally chose to put his product in one pound jars which cost him close to $.60 a piece. He thought the jar without a label had an unfinished appearance so he bought labels. Labels only added a little over a penny to his cost and made a world of difference in the look.

Attractive bottles now lined a shelf in our basement. Before Don could offer these for sale, he had to price the product. A supplier, beekeeper and mentor said, "Never under price your honey. It's better than supermarket honey. Ask more for it." Don thought about costs, not just the cost of bottling but the price of supplies too and decided to ask $2.25 for a one-pound-jar.

Now we were ready to try the market place. I decided to help at this point because I wanted one year's crop out of the basement before the extractor started to turn again. We decided to see if we could sell some of our jars at work.

Selling anything at the office, including Girl Scout cookies, can bother the boss if it is not handled correctly, but if the sales do not take time away from your work and do not clutter up the area, most supervisors will actually become customers. Many companies have established methods already set up for employees to exchange goods and services. Both of our places of employment had established avenues of exchange and we just added a few unobtrusive advertising techniques to sell pounds of product. After several years of establishing repeat customers, we had actually marketed over 100 pounds in just a few weeks at our places of work.

We began by posting this notice on bulletin boards at work.

The honey crop is here. If you would like a jar of the fresh local product put your name and phone number on this order form or call Don Batt at (here we gave our home phone).

We thought through even this simple notice and worded it so our sales practices wouldn't annoy our employers. The notice did not ask buyers to see or call either of us at work and did not indicate that honey could be purchased anywhere on company premises.

In addition to the bulletin board announcement, we added word of mouth to our marketing. This was easy for me, a college professor, because of the endless faculty meetings. With everyone gathered I could mingle and talk about honey. Division meetings were smaller and so informal that before we actually got down to business I could announce that honey was being extracted and bottled for sale. Don used lunch time to talk about his hobby. Soon almost everyone around us knew that our back yard was buzzing and if they wanted honey, they could find it at our house.

Now that people were buying our product, it became very important to see that they were satisfied with the honey – actually thought it was better than grocery store honey.

Since our honey was natural and not treated, it might crystallize on a consumer's shelf. For first time buyers of non-processed honey this could be unsettling. We gave each customer a printout that explained crystallization actually meant a good product and could be reversed by immersing the jar in warm water for a few minutes. This simple step insured satisfaction from customers who were not familiar with the properties of natural honey.

On this same sheet were some tips about buying honey – why color differs, why taste differs, the water to honey content that should be present in a good product. This made our product look good and helped the customer be a wiser buyer at other stands.

To our customer satisfaction efforts, we added some basic customer relations steps. When someone bought honey from us, we chatted with him to find out any special likes or reasons for honey consumption. We made a record of buyers names and personal information. For example, one customer suffered from severe allergies and experienced relief from eating local honey. Another

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SELLING HONEY ... Cont. From Pg. 513

customer used honey to make granola and bake during the holiday season. We put the personal information to work in making customers feel they were special and that we remembered them. We also used the information to push the product. I might mention casually in November, "The holiday season is coming up. Do you need some honey?"

We also provided our customers with solid reasons for increasing their use of our product. I love to cook and each time I created a new recipe using honey or tried one I found in a cookbook that I liked, I put it in my computer. I kept a one-page printout of my latest meal wonders and gave the sheet to all our customers who liked to cook.

I did some pretty extensive research and wrote a free-lance article on latest medical findings about the health benefits of honey. Anyone interested in natural foods or worried about the health problems got a one-page summary of my article. There are lots of articles out there you can use to tout the medical benefits of the product. For example, the September 1995 issue of *Bee Culture* has an article on the antibacterial properties of honey. In this same vain, I collected home remedies that used honey as a key ingredient. We have close friends who are Amish. They loaned me the family's old volume of natural cures and I printed up the ones for coughs, sore throats, stomach problems, burns – all of which used honey as a base. I shared this age-old wisdom with customers who already were willing to take a broader look at medicine.

We also tried to plant the idea of honey as a good gift for a variety of occasions. I suggested a jar might be a perfect present for the teacher at Christmas time. I taught. I know just how much Avon perfume, after shave, and hand lotion a person can use and most teachers get more than they can apply in a year. I also told customers that honey makes a natural hostess gift. It suggests that the giver has used a little imagination instead of dragging along the usual bottle of wine. Our standard honey jar, however, did not have a "present" appearance.

To turn some of our honey into a gift product, I did a little shopping myself. At an import store I found attractive colored jars with cork stoppers. The jars could be reused or displayed after the honey was gone. We added the extra cost of these jars to the normal cost of our product and sold gift honey for $3.50.

We had a steady clientele and no problem selling our honey for several years. Then we decided on a change of life-style. Don retired, I left my position and we moved to our farm in upstate New York. Our old customers were far away and we now had no easy market at work. Again I wondered about a surplus of honey but we quickly realized that the marketing strategies we used in Connecticut were transferable to New York. All we needed was a sales spot so I checked out the possibilities. Local farmers' markets abound here and will be part of the answer to our jars and jars of product. With more space Don has decided to keep more hives and we expect to have over 200 pounds in the future.

Since we have a choice of four market spots, all within 15 miles of our farm, I spent some time at each market. I looked at shoppers and found that they were different at each location. At a town on the St. Lawrence Seaway the shoppers were a mix of local residents and summer people. At the college town, shoppers were professors, students and more upscale local residents. At the town just down the road, all the shoppers were country folk.

I also discovered that some markets were informal and required no permit or annual fee. Everyone was welcome to sell wares on a community spot. Other markets such as the one in Canton, charged an annual fee of $20 for a sale spot.

We selected two of the four to try – the local country clientele and the college town. Here's our reasoning. The closest market with only local country people shopping there will give us access to our neighbors. These people will learn that we have honey and eventually come to the farm for the product. The college town will offer a market to health food advocates and gift buyers.

We packaged the honey differently for each market. For our local spot we will sell in bulk, in plain containers and for less than we will at the other market. Here I will swap recipes regularly. In the college town we will stress appearance and put out the product in our upscale packaging. We will also use all the academic literature to increase sales.

Our farmers' markets are open on different days – one Saturday mornings and the other every Tuesday and Friday. We can set up our folding table on all those days but our time is also valuable and that would be a big chunk out of our week for relatively little return. If sales don't warrant sitting all morning on a town green, I have two other ideas to rid the basement of honey.

First I have already approached a crossroads store down the lane and the owner is willing to sell the honey for me on a consignment basis. I put out the honey, keep the shelf stocked, record the jars that are sold each week and split the sale price with the owner. I'll use this avenue only if the honey threatens to flood the basement.

My final method of securing profit from Don's pleasure is to keep the honey until the Christmas season. Our farm is a choose-and-cut Christmas tree business and this year we are building a retail shop. Along with trees, wréathes, stands and Santa stuff, we will put out honey both in plain jars for cooking and special jars for gift giving.

The extractor is turning as I write so I hope our sales efforts will be as successful in New York as they were in Connecticut. BC

Linda Batt is a hobby beekeeper's partner, and very successful honey seller from Rensselaer Falls, NY.

BOLIVIA HONEY FESTIVAL

Dewey Caron

Many state, regional and local bee associations have organized honey festivals across the U.S. Recently I attended a National honey festival in Bolivia, South America, where I spent eight months on a sabbatical leave from the University of Delaware.

The second annual Bolivian honey festival was held in mid-November, suitably at the end of the honey harvest season, in the tropical region of Santa Cruz. The festival had a distinct flavor of the region and country but the objective of focusing attention on bee products and attracting the general public to see honey bees in their most favorable light was the same as any festival might do. In Bolivia, this is especially important since the only honey bee the beekeepers have to manage is the Africanized bee. Moreover, honey adulteration is suspected to be widespread by customers.

The Bolivian honey festival was held in a grove of trees on the farm of beekeeper Ovidio Mercado in the community of Gavita, near the town of Portachuelo, which is an hour outside the regional capital of Santa Cruz. A local association of about 15 beekeepers were co-hosts along with the larger regional bee association of Santa Cruz. The festival itself was conceived and organized by Issac Nunéz, Santa Cruz's best known and largest beekeeper.

Issac Nunez has been a beekeeper for over 40 years. He is the Santa Cruz Bee Association President. He currently manages 250 colonies and is one of the largest beekeepers in Bolivia. He once had over 600 colonies, but that was prior to Africanization. Issac also sells bee equipment and nucs and has started many individuals as beekeepers.

The festival consisted of displays set up by five groups. Two were bee supply dealers, two were put up by the local bee associations and the fifth was by a stingless bee beekeeper. One of the dealers, organizer Issac Nunez, had prepared an observation hive which is always guaranteed to attract attention. Another brought a nuc with screen walls for demonstration. All the participants sold honey and bee products such as pollen, propolis and beeswax. Sales were brisk.

The festival began with a Catholic mass that included the blessing of the honey bees. Bolivia is a predominantly Catholic country and virtually all festivals are centered around feast days of saints or other religious themes. After viewing the displays, most people then headed for the shade of the trees to listen to the typical country music and eat and drink. One of the beer distributors had beverage distribution rights and several ladies of the communities had set up fires to cook traditional foods of rice, beans, fried banana and chicken or pork. Food and drink are always part of any festival in Bolivia.

While at the festival, I visited the apiary of Ovidio but we did not open any colonies as this could have resulted in festival participants receiving stings. Ovidio had 65 colonies in the vegetation around his house, nearly all in standard movable frame hives, and also 40 boxes holding the native stingless bees. I thought that was a high number but he said he harvests about 40 kilos (88 lbs.) per colony average which is excellent. Depending upon the species, he can harvest up to a kilo (2.2 lbs.) of honey from one of the stingless boxes.

Ovidio showed me his honey house which was typical of the structures of the region with adobe covering bamboo slats for walls and a palm frond roof. He had added fly screening at holes and over the window and door to keep bees out of the extracting area. He harvests three or four times per year, typical of tropical areas and extracts at night because of the potential robbing behavior of the Africanized bee. Although larger than average, his apiary and management were typical of the beekeepers in the Gavita-Portachuelo area of Bolivia.

Toward the end of the day, a honey queen contest was held. Each contestant spoke briefly and a three-person committee judged the candidates on their poise, knowledge of bees and their attractiveness. A local 18 year old from Portachuelo was selected to the delight of

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BOLIVIA ... Cont. From Pg. 515

Isaac Nunez with two young admirers at the portable observation hive.

the crowd. She will appear in other events in the coming year to represent the beekeepers though they will not support her financially.

The festival attracted local television and yielded an informative article in the newspaper, complete with front page photo and headlines. The 400 or so people who attended certainly seemed to enjoy the festival and the displayers were very pleased with their sales and contacts. It was a pleasant Sunday afternoon.

Does your association reach out to the general public? Some honey shows, such as the 'National' honey show,

Ovidio's honey house.

and EAS and WAS honey shows, are mostly beekeepers showing their honey to other beekeepers. Honey shows at state and regional fairs have not been modernized and both the number and quality of displays and honey submitted for competition has diminished in recent years. Some states have an excellent display for state fairs and there are a number of excellent country or regional displays.

Every association should double efforts to reach out to the public. One association meeting, as a minimum, ought to be in a public area to attract attention and interest of the general public, not just for beekeepers. State fairs and beekeeper displays need to be critically examined – what is the message we wish to convey to the general public? Instead of static displays of honey or products has your association considered a bee cage, giveaways of honey, offered observation hives to fall harvest festivals, nature centers, etc. It is a great way to get new members involved and to advertise the bee and our products.

With a minimum of effort, Bolivia has had two annual honey festivals with growing public interest. If your association does not do something to reach the general public, maybe this is the year to start. I predict interest exists in your area, as in the country of Bolivia, and you will find it easier to organize and conduct than you might imagine. BC

Dewey Caron is an Enomology Professor at the University of Delaware, and frequent visitor to South America.

Testing For . . .

SUPER HYGENIC BEES

Here's a practical way to test *YOUR* bees for this valuable trait.

Michael Meyer

Years ago Walter Rothenbuhler determined that honey bees possessed genes for what he called hygenic (HYG) behavior. He also determined that these genes were carried by the queen and passed on to her offspring. Drones that mated with virgin queens also carried these genes, and when both drones and virgin queens carried this genetic disposition, the behavior of the bees which resulted from such matings were called 'hygienic,' that is, these bees had the ability and natural predisposition to 1) sense or notice when something foreign was in the hive and 2) remove that object or objects from the hive.

Rothenbuhler's work went largely unnoticed and unrewarded for years. Most beekeepers and researchers adopted a "So what?" attitude, in that this discovery held little practical significance. However, several researchers, most notably Steve Taber and more recently Marla Spivak, realized the potential of selecting and breeding bees specifically for this trait and wrote and devoted many articles to this subject.

Benefits of a hive with HYG would include less disease – less AFB, less EFB, less chalkbrood, etc. Some researchers and beekeepers believe that if a bee is developed that will be *Varroa*-resistant, then it will come not from a specific race of honey bee but rather from bees with the HYG genes. In general, a hive with HYG keeps itself extremely clean. AFB and chalkbrood infected larvae are removed quickly and the cells cleaned spotlessly. Dead bees are removed right away and little if any debris is left on the bottom boards. From a group of HYG hives other characteristics can be selected by the bee breeder such as honey production, temper, calmness, color, overwintering, spring buildup, swarming, etc., but first and foremost should be this HYG characteristic. If hives are clean and disease free then many other positive characteristics will follow.

The testing for HYG remains laborious. In a nutshell, it consists of putting a square of dead brood (killed by freezing) into a hive and observing the behavior of the bees in removing this brood in 24-hour-time periods. In a recent article (Jan '96 ABJ) Taber demonstrated how a large number of hives (500+) could be tested for HYG behavior. The methodology, while as efficient as possible, was still extremely laborious and I feel few beekeepers or queen breeders would use it. One question I raised with Marla Spivak was "How do you use this test method if you have plastic foundation?" She had no answer for that one. I use plastic foundation almost exclusively, so the freeze-brood method was largely out.

In the April issue of *Bee Culture* I detailed a practical method of using grease patties. This method incorporated the use of 1/4" hardware cloth rectangles measuring 4" x 2" and containing two hive tool dollups of the bee grease mixture spread about 1/4" thick and weighing about 1.5 oz. Starting three years ago I noticed that the bees cleaned up this bee grease in various time periods. The bees that cleaned it the fastest had very clean hives, i.e. no dead bees left around, no bees in the feeders, clean bottom boards, etc. So I tested a small sample of these bees and found them to be HYG by the freeze-brood method. My observations were such that I started using the grease patty method for determining HYG. Although Marla Spivak stated that only about 10% of a random sampling of honey bees would test HYG I have found that by selecting queen mothers and drone mothers testing HYG as my breeder stock, that over a two-year period my colonies are approaching 50% in HYG behavior. This is a significant increase over natural selection and should be used by all breeders in selecting stock.

So what is the Meyer Method for HYG? First, grease patties are made up, with or without TM, depending on the season. These should all be standardized as much as practical, i.e., the wire rectangles should be the same size and the amount of grease used should be about the same amount. This is placed on the top bars of the brood chamber (not the supers) in the same position on each hive, which should be somewhere near the middle two frames. Hives to be tested should be about the same size. Very small hives or nucs will not give an accurate reading as they will take too long to clean this up. Also, very large hives, just by the sheer number of bees, will sometimes clean this up quickly, yet later in the year will not test positive for HYG. The best time to test is in the spring or fall, although HYG hives given a patty over the winter will clean it up by Spring, but that is a side test and not included in the time frame here.

Next, record the date on the hive somehow, using your method of choice. Return in about two weeks and make observances, then return in four weeks and make further observances.

One can divide the bees' behavior into five categories: 1 - Super Hygienic; 2 - Very Hygienic; 3 - Moderately Hygienic; 4 - Slightly Hygienic; 5 - Non-Hygienic.

Here are some characteristics of each category.

Category 5 - Dead bees left on grease patty, very little eaten, mainly around edges or a few holes in middle, but generally untouched. Hive generally filthy, bottom board a mess, heavy chalkbrood in season.

Category 4 - About 25-35% of

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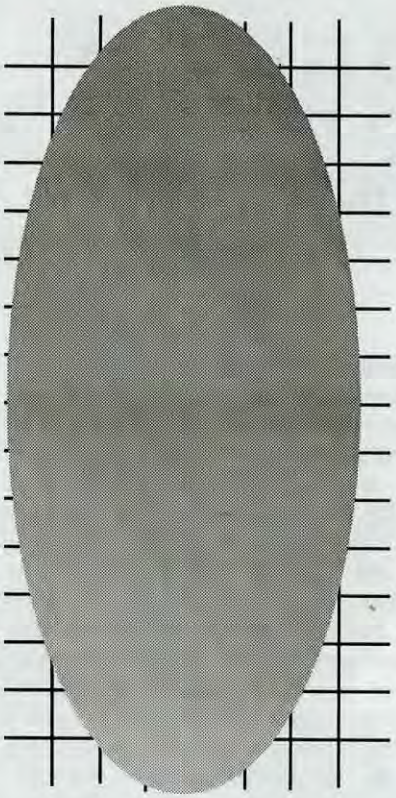
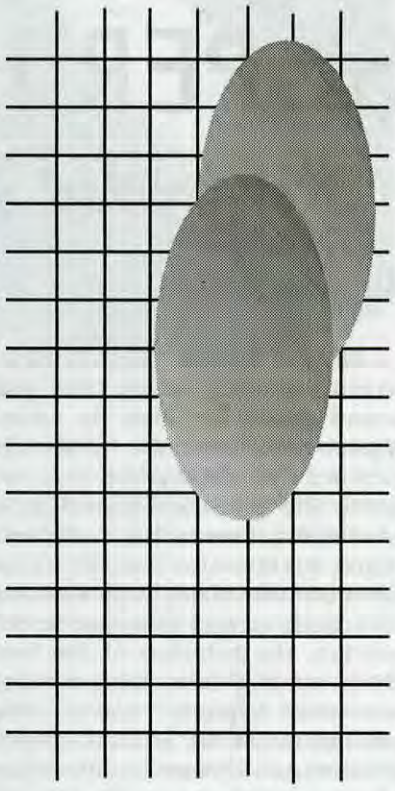
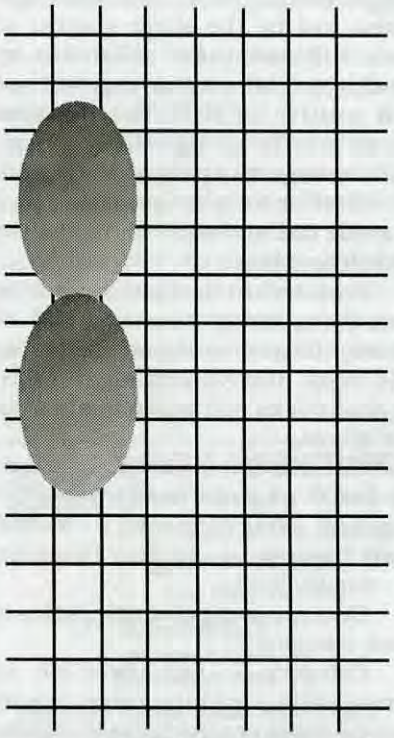


Category 5 - Dead bees left on grease patty, very little eaten, mainly around edges or a few holes in middle, but generally untouched. Hive generally filthy, bottom board a mess, heavy chalkbrood in season.

Category 4 - About 25-35% of patty consumed, occasional dead bee in patty. Hive has some debris, light chalkbrood in season, etc.

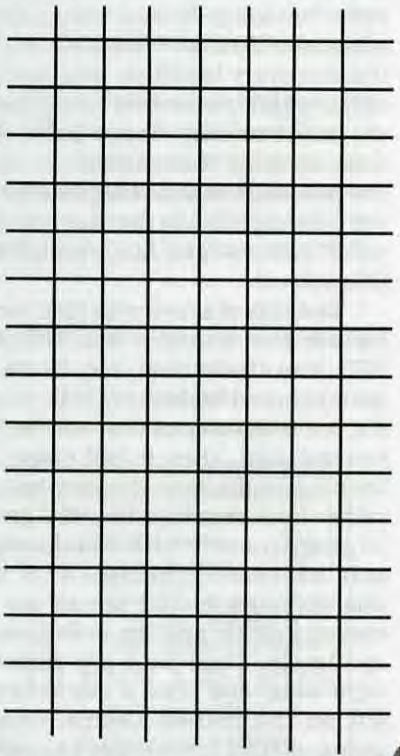


Category 3 - Patty 50 - 75% consumed, usually no dead bees, small debris in hive. This can be used for breeding if all other qualities are present, but is usually not the best choice.



Category 2 - 90% of patty consumed, although a small corner is left. No other debris present generally. These are fine for breeding or keeping, if other desirable characteristics are present.

Standardize the size of the wire mesh grid you use on every colony to 4" x 2", and make sure the grease patties are all about the same size.



Category 1 - Only a few bees will have almost all the patty consumed in two weeks and in four weeks not only will the patty be consumed, but the wire grid will be polished with propolis.

patty consumed, occasional dead bee in patty. Hive has some debris, light chalkbrood in season, etc.

Neither Category 5 nor Category 4 should *ever* be used for breeder selection, no matter what other desirable characteristics exist, including high honey production. Offspring of these hives will eventually be overcome with disease of some sort.

Category 3 - Patty 50 - 75% consumed, usually no dead bees, small debris in hive. This can be used for breeding if all other qualities are present, but is usually not the best choice.

Category 2 - 90% of patty consumed, although a small corner is left. No other debris present generally. These are fine for breeding or keeping, if other desirable characteristics are present.

Category 1 - Super Hygienic This category I want to spend some time on. This is the reason for the two week check. Only a few bees will have almost all the patty consumed in two weeks and in four weeks not only will the patty be consumed, but the wire grid will be polished with propolis. Other hive observances are that the hive is generally spotless. There is not a speck of dirt even in the feeder, if inside feeders are used. These are the ones to breed from and to use for drone stock. Test them several times through the season to make sure the first test was not a fluke, and breed from them next year. Mark these queens to make sure they did not get superseded during the season.

It's easy to see how this can be of benefit to the queen breeder or to those beekeepers who normally and routinely select and raise their own queens. Your hives will have less disease, they'll develop resistance to AFB, and maybe someday you'll have a *Varroa* resistant strain. Other beekeepers can use this method to mark category 4 and 5 hives for requeening, or to test the stock they get from their queen breeder of choice.

I issue a challenge to the researchers out there to give this method a thorough scientific testing, for my conclusions are based on thousands of observations.

A good case could be made for a scientific study, however. Populations of hives could be equalized, the grease patties could be made from the same formula, each patty could be weighed before placement in the hive, the placement of patties in the hives could be standardized, all hives could be given patties the same day, observances could be standardized per time period, etc. At the conclusion, the best hives or the most hygienic could be tested using the freeze-brood method and the results compared. I would urge such researchers to use this several times on the same hive, but they will see a correlation on the Super HYG hives and the rate and thoroughness of cleanup versus general hive hygiene.

I invite comments and inquiries from other beekeepers and bee breeders who might be using this method in the future. I have coined the terms Meyer Method and Super Hygienic as described earlier in this article and hope they'll be in common usage in the bee world someday. You all have Super Hygienic bees in your bee yards, just use the Meyer Method to find them. Ask your queen breeders to start testing on a regular basis and the whole bee industry will be better for it. BC

Michael Meyer is a commercial beekeeper from Missouri and an occasional contributor to these pages on a variety of subjects.

FOCUS ON

FALL FEEDING

James E. Tew

It was only a few years ago that beekeepers just let their bees take care of themselves year round. A common recommendation was to take the spring honey for the beekeeper while the darker, stronger fall honey was winter stores on which the colony was to pass the winter. Well, that is probably not the best advice any longer. The health of productive honey bee colonies has become too valuable to leave to chance.

Feeding colonies in the spring is logical. Many of you have always done that. It's a good way to get the bees started...to wake them up early and get them off to a good productive year. That's still an excellent recommendation. Keep on doing it. The spring season is exciting and promising.

Alternatively, the fall season is one of resolution - of dedication. The honey production year is over. The crop - for better or worse - is in. For us, there are meetings to attend, school is starting and summer is ending. Blah. It's hard to get worked up to do bee work; yet, thanks to mites, it has become more important than ever to get bee colonies prepared for winter. That preparation must be started long before the cold weather arrives. It's much easier to feed colonies during warm months compared to trying to feed during the erratic, cool days of the following early spring.

Bees Aren't Always Smart

We like to think that bees always know what's best for them (and they usually do), but there are still ways we can help. Several research papers have presented results concluding that sucrose - common table sugar - is normally a better winter food than the honey that bees collect from natural autumn sources. A good clean supply of sucrose, converted to honey and stored in the combs, will provide better wintering stores than honey collected from natural sources. Commercial beekeepers frequently extract *all* fall-season honey and then feed colonies either sugar syrup or corn syrup in quantities great enough to provide all the winter food the bees would need. An old memory comes to mind....Many years ago while I was beekeeping in Maryland, some of our wintering colonies began to show signs of dysentery. Conditions got worse by the day. Colonies were streaked by fecal matter, dead and dying bees were piled in front of the colonies and neighbors were complaining of spots on their cars. This was disconcerting. The colonies had been strong in the fall and showed no signs of any disease. We had no history of Nosema. I enlisted the help of an insect pathologist who reported no high levels of honey bee pathogens, but he did find high levels of melezitose, a sugar commonly found in honey dew. In the few days it took for us to academically conclude this, the colonies died. Bees are not always so smart. Our best guess was that the colonies had stored honey dew honey, a low quality honey, and were not able to pass the winter on it.

Taking Feed

When it comes to feeding bees, it's difficult to determine if bees are not so smart or, conversely, if they are too smart for their own good. Bees have no obvious way to transmit information concerning food that is literally in front of their bee noses. It's not uncommon to watch a colony that has just had feed put on show a great deal of flight activity near the front of the hive. Individual bees, having discovered the feeder, have no easy way to tell other bees of the find. In their dance, they essentially say that a food source is somewhere within a few yards of the hive when in reality, it is probably somewhere within the hive. Each bee that takes syrup from a feeder must learn to do it individually. Some bees learn faster than others. Indeed, some bees will never learn to take the food efficiently. This inability of some colonies to learn to take syrup explains why some colonies take syrup so fast while others will leave feed on so long that it will actually ferment.

If there are only a few colonies to be fed, frames of honey (sugar syrup) can be taken from "smart" colonies and given to the slower colonies. This is labor intensive, but it will get food in the right form to all colonies in the correct quantity. Intensive feeding, as described here will, on occasion, stimulate brood rearing. I am not sure how that can be prevented. I suppose I would rather have a colony too strong going into winter as opposed to being weak. Having them produce brood is the lesser of the potential evils.

How Much ??

When you feed for storage rather than stimulation, feed syrup that is as thick as you can make it. Corn syrup can be fed straight while sugar syrup (HFCS) should be mixed with hot water. Keep in mind that five pounds of sugar in 50 gallons of water is still just five pounds of sugar. The thicker the syrup, the greater the benefit to the colony. Since it requires no mixing, corn syrup is easier to feed, but it may be more difficult for the smaller beekeeper to get.

When do you stop feeding? A strong colony going into winter will need around fifteen deep frames of capped honey - but there are a lot of variables not the least of which will be the climate where the colony is wintering. However, even colonies in warm climates will require similar amounts of food stores - the biggest difference is that colonies in warmer climates will be able to take more cleansing flights. This will enable warm-climate bees to winter easier on lesser quality food stores. However, taking more flights during times when absolutely NO nectar is available only deletes honey stores more rapidly.

A two-story colony going into winter should have a gross weight of (at least)165-185 pounds - again depending on many variables. For the

Continued on Page 522

FEEDING

TOP FEEDERS

Richard Bonney

Feeding bees can be such a nuisance – but it can also be very rewarding. Helping a new colony get off to a good start, aiding the bees through a difficult time, building up winter stores, all of these give tangible, positive results, but unfortunately the nuisance part can sometimes cause the job to be done inadequately. Feeders are one more piece of equipment to own, to clean and maintain, and to store for most of the year, and each style of feeder has its own particular disadvantages. Advantages, too, but as with so much in life, the disadvantages often dominate our thinking and actions.

Let's dwell for a moment on feeding and feeders in general. When a colony needs food, it needs lots of food – a gallon at least but usually more, and often much more. To feed efficiently, the feeder should accommodate syrup by the gallon as a minimum quantity. To my thinking, the Boardman feeder and the division board feeder are not adequate for large volume feeding. The basic reason is that they do not hold enough syrup, but both of them have secondary problems as well. The Boardman feeder is outside the hive where it often attracts robber bees and skunks. Further, in cool weather, depending on just how cool, the bees may be reluctant to break from the cluster to feed. Feed should be accessible to the bees twenty-four hours a day. On the positive side, the Boardman feeder is small and easy to use; it doesn't present some of the disadvantages of the other, larger feeders that I will mention. I still don't like it except in very specific instances.

The division board feeder by its nature has different drawbacks. It replaces at least one frame in the hive, and sometimes two depending on its size, and because of its design many bees may fall into it and drown. Removing it and replacing it for each use period is a disruption to the hive, but if left in the hive when not in use, one or two fewer frames are available to the bees. Then, after being emptied, the feeder usually fills up with burr comb and debris, meaning that even if permanently installed in the hive, it must be taken out and cleaned before it can be used again, presenting another problem: Since it normally is placed in an end position in the hive it will probably be propolized solidly to the hive body. More disruption.

Where does this leave us, then? With the hive top feeders – an all encompassing term which covers several different styles, but all of which allow for volume feeding. Further, they are more accessible to the bees, being directly overhead.

Included in this category are at least three basic styles, the gallon jar or plastic pail, the "trough", and the baggie. The down side to each of these is the equipment required. Sometimes this is not a big consideration. If you own only one or two colonies, or own more but need to feed only one or two at a time, then we're not talking of a lot of equipment. If you expand to ten colonies and want to feed them all in the same period, that's a different story. But what is this equipment we're talking about? We will look at each style in turn.

The Gallon Jar and the Plastic Pail

The gallon jar and the plastic pail are not inter-

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This trough style feeder has the access at one end. The bees are kept behind the wire mesh so they won't drown in the syrup. If the hive slopes to the front or back then the access should be at the low end so they can get all the syrup.

FALL FEEDING ... Cont. From Pg. 520

Open feeding, like this barrel with a burlap bag for standing on and a cover to keep rain out, works well for a large number of colonies in an outyard. It can double as a water source in summer.

average person, the colony should feel so heavy as to be difficult to tilt from behind. If the colony is obviously light and can be shifted rather easily, continue to feed it. As the weather becomes cold, bees will finally stop taking the feed.

What Kind of Feeder??

Through the years, beekeepers have devised an incredible number of ways to get sugar to colonies. Many of these feeders have restrictions such as weather conditions, hive size, cost, or quantity of syrup delivered. Feeders range dramatically in complexity ranging from sugar on the top bars to gasoline-driven comb fillers.

Open Feeding. Open feeding is one of the simplest ways to get syrup to a large number of colonies. The problem is that the colonies may not always be yours. Also, weaker colonies may have problems getting their fair share if competing with stronger colonies. Until mites destroyed much of the feral honey bee population, open feeding was not commonly used. It may be time to try it again.

Essentially, all you do is take a large container - a galvanized tub, a 55-gallon drum cut in half, or a plastic child's wading pool, and put sugar syrup in it. It will need either gravel or straw placed in it for the bees to stand on while feeding. Keeping it loosely covered will help keep out rain. Don't put so much out that the bees can't take it in a day or so. We have had colonies take 60 gallons of syrup in one day. Naturally, be cautious when doing this in crowded neighborhoods and don't try it in cold weather. Also, be certain horses or cattle can't get into it as it will cause serious harm. Buying a dead cow isn't profitable.

It may take a few hours for foraging bees to find it, but once they do, it's a fast way to get stores to the colonies.

Division Board feeders hang in the box like a frame. Floats or side scoring are needed to keep bees from drowning.

Boardman Feeders. For beekeepers with only a few colonies, using the common Boardman feeder is practical. It's easy to tell when it needs filling, it's easy to fill without disturbing the bees, and it's easy to install, plus it's cheap. This feeder sounds perfect - but it has problems. It can incite robbing if it leaks near the entrance of the hive. It requires glass jars which easily break in route to the bee yard and most importantly, bees can't readily use this feeder during cool weather.

Division Board Feeders. In beekeeping years long gone, there were pieces of beekeeping equipment named "division boards" that were used to compartmentalize a hive. Essentially, four or five frames were partitioned off using a temporary wall made of a one-half inch board. It was only a small step to make the board wider and hollow and use it as a container for an internal hive feeder. Earlier ones were made from wood, but all are plastic now. They take the place of a single frame and are usually located at the sides of the brood nest. To fill it, maneuver hive equipment so the filler spout is reachable and fill it with about a gallon of sugar syrup. It needs to have a float in the feeder or bees will drown. The bees take feed from this gadget very well, but it requires removing a frame and moving equipment to fill it.

Hive Top Feeders. There are many models of hive top feeders - including several antique models. As with division board feeders, current hive top feeders are now made of plastic. The basic premise of all styles of hive top feeders is for bees to move through openings up into the feeder which is positioned directly beneath the inner cover. The positioning of

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TOP FEEDERS ... Cont. From Pg. 521

changeable terms. They refer to two different things. However, they share attributes and are used in the same way. The plastic pail is made, obviously, of plastic, but the gallon jar may be glass or plastic. Glass is, of course, more breakable but I prefer it. The plastic jars I have tried seem to leak more. I attribute this to unevenness at the rim; the lid does not seal as tightly as it should.

Leakage from feeders is often treated as a minor problem but it can be major. With excessive leakage the syrup can run through the hive, seeping out between hive bodies or at the entrance. On the way it can wet bees and comb. In nature, bees don't have to cope with large volumes of unconfined nectar or honey. They can easily be overwhelmed by large amounts of any liquid. Then, as syrup leaks out of the hive it can attract robber bees and other pests. The bees will do their best to clean up the leakage but much of it may be wasted. You cannot be sure how much the bees actually stored.

The plastic pail is typically a two gallon or larger pail with a friction fit cover. The bees feed through a special insert in the cover when the pail is inverted. Both the jar and the pail are used by inverting them, either over the hole in the inner cover or directly on top of the frames, allowing the bees to come up under to take syrup from the very small holes in the lid. I prefer to set it on the inner cover. The bees are less disturbed when the feeder is placed or removed.

In addition to the jar or pail, a box is necessary to house this feeder, to protect it from the elements and to keep away potential robbers. An empty hive body or a couple of empty supers are normally used for this. This raises the question – do you keep these empty boxes on hand as single purpose units, used only for the brief periods each year that you feed, or do you use extra hive bodies and extracting supers, after storing the frames away temporarily? That is a question that only each individual can answer and depends on variables such as total number of hives, storage space, and economics.

Gallon jars are not listed in the various catalogs but they are readily available from commercial kitchens. Such jars are frequently used for food – mayonnaise, pickles, mustard, and the like – and usually can be obtained at no cost. Plastic pails are listed in several catalogs at a modest price – $4.00 or so.

If you use glass jars it is worthwhile to construct a sturdy, partitioned container in which to carry and store them. Before storing, though, whether it be glass or plastic, be sure the container is clean. Wash and then disinfect them with a little chlorine. Old syrup and syrup residues become moldy. The mold cleans from glass with modest effort but it can be difficult to remove from plastic, especially after a little time has passed.

Don't leave any of these containers on the hive any longer than necessary. The bees will propolize the lid to the container very quickly, and with jars especially the lids become extremely difficult to remove. Once the container is empty, the bees will also propolize the holes you have punched in the lid.

The Trough

When someone speaks of a hive top feeder, this is usually the style envisioned – a wooden (or, rarely, plastic) trough or tub, usually divided into two compartments, and into which the bees have a limited access. This style of feeder requires no supporting equipment. It is usually no larger than a shallow super and when not in use can be stored with relative ease. Its capacity is upwards of two gallons, depending on specific dimensions.

It is possible to make these feeders in a home workshop, but such construction must be done carefully. Unless accurately cut and carefully sealed, the joints will leak, with the same kind of consequences mentioned earlier. A sealant in the joints is necessary, but this brings potential problems, too. Commercially made sealants such as caulking may contain substances that are harmful to bees. Wax, either paraffin or beeswax, works well but it must be renewed periodically. Both in use and in storage these feeders are subject to fluctuating temperature and humidity. The joints will most likely open up over time. Best success with wax comes from applying the molten wax to warm or hot wood. The wax then will penetrate the wood and give a better seal. Applied to unwarmed wood, the wax will solidify faster and tend to form a skim on the wood, and the seal is chancy.

Trough feeders are usually constructed so that the bees travel up through a turret arrangement in the cen-

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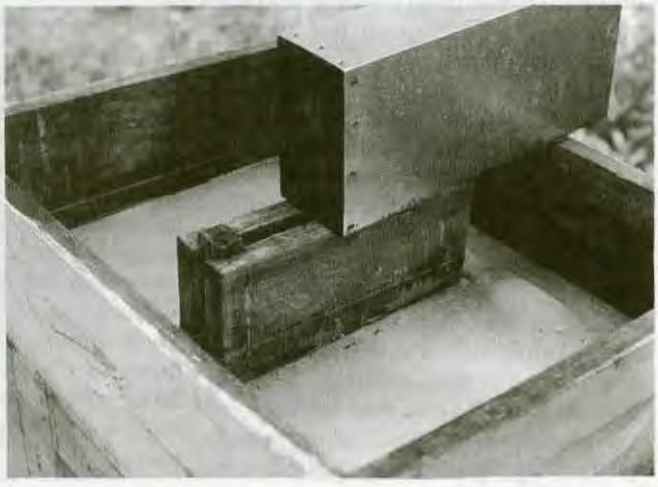
In this design the bees come up through a turret inside the sheet metal box and then down to the syrup level. The syrup seeps under the edge of the box to give them access.



FALL FEEDING ... Cont. From Pg. 522

Pail feeders, plastic (most common) or metal are common and work well. Place the screen directly over the top bars if an inner cover isn't used, or over the hole in an inner cover.

the various openings varies with the style of feeder. These work well. They are easy to fill and have a large capacity - sometimes as much as two gallons. However, they must be completely removed before any other hive manipulation can be accomplished. Older style feeders had a tendency to seep rather than outright leak. Naturally, this would encourage robbing.

Friction Pail Top Feeders. Simple, efficient feeders can be devised by using friction-top metal cans with a few small holes punched into the lid. The can is then inverted over the hand hold in the inner cover. Bees can move into the small area between the inner cover and the lid of the pail and feed from syrup drops hanging there. Since a vacuum is formed in the can and prevents syrup from flowing out too fast, it is important the lid fit tightly. There are also friction-top plastic pails that are in common use now. Though not totally necessary, these pails can be surrounded by an empty deep super. This will keep the feeder from being knocked off by wind or animals.

Gasoline-Powered Fillers. Comb fillers are used for spraying syrup into cells. In this manner, entire frames - full of syrup - could be placed near the brood nest. Bees will consolidate and manipulate the syrup into honey or will use it immediately. This is probably the fastest way for bees to get sugar syrup feed. But, sugar syrup that is not consolidated will granulate quickly. This is not really a major problem for the bees, but it does result in sticky, crystallized syrup all over the place.

Garden Type Compression Sprayers. Common "pump-up" garden sprayers can be used in exactly the same manner as described above. These are much cheaper, but will only fill a few frames before the sprayer, itself, must be refilled.

Candy Boards. I don't hear of candy boards being used too much any more. I suppose they are labor intensive. A fondant-type candy was made from simple recipes, molded into a wooden frame and put on top of the colony. A recipe commonly used to make sugar candy is:

- 15 pounds of sugar
- 3 pounds of glucose or white syrup
- 4 cups of water
- One half teaspoon of cream of tartar

Dissolve sugar in water by stirring and boiling the mixture until the temperature of the syrup is at 242°F. Let it cool to 180°F and beat thick. Pour into molds and allow to harden.

"Bees have no obvious way to transmit information concerning food that is literally in front of their bee noses."

Dry Sugar. This is the simplest, cheapest, and probably least effective way to feed bees. Normally, granulated sugar is poured around the hand-hold in the inner cover. Bees will need water to covert dry sugar to simple syrup. Occasionally, some bees will laboriously remove the sugar and toss it out front, but most hives will use it reasonably well. This procedure is frequently used during hard, cold weather, but will also work very well during late fall to early spring.

The Messy Granulated Corn Syrup Method. Corn syrup granulates rather easily. I have known beekeepers who will take (literally) handfuls of granulated corn syrup and spread it on the top bars of the brood nest. Messy that it is, it is also fast, simple, and near the bees. It works alright if you can stand the sticky hands.

What Kind of Sugar?

Occasionally, I have heard of some unusual "free" sugar sources.

Contaminated soft drink syrup, out-of-date pre-sweetened Jello products, and by-products from chewing gum manufacturers. If something sounds too good to be true, it probably is. Any sugar product that has a lot of indigestible by-products will cause the bees harm during winter months (including bulk powdered sugar which has small amounts of corn starch in it).

Other than plain table sugar, use only high fructose corn syrup. It's best to get syrup from a bee supply dealer. Beekeepers use corn syrup with either 55% or 42% solids. Granulated sugar can be purchased in quantity from wholesale grocer outlets.

Cool Weather

Feeding bees in cool weather is never a good plan, but sometimes it can't be helped. Select a feeder that can be filled without undue disruption to the colony or the beekeeper. Select a feeder that gets the feed as close to the bees as possible in a form that is as ready to use as possible. Feeding bees in hard winter is nearly impossible. If you must feed wintering bees, combs of capped honey can't be beat, but are not normally available. I'd go with the dry sugar on the inner cover, but your chances for getting a strong colony coming out of winter are not good. Do the best you can to feed them, but try not to get caught in this same situation next fall. BC

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Feed & Warmth

One of the disadvantages to a trough feeder or a baggie feeder is the bulky piece of equipment that must be stored for most of the year. Some beekeepers have found a partial solution to this. Since these feeders are basically boxes with mostly open space inside, they can serve nicely as hive top insulators during the winter. Fill the box with insulating material – scrap fiberglass batting, for instance – and place it over the inner cover. The timing for winter insulation fits nicely with the end of fall feeding and the beginning of spring feeding, if either is to be done.

ter or at the side of the box. Then, to gain access to the syrup, they go down the outside of the turret to the liquid level. The bees direct access to the liquid must be restricted or large numbers will fall in and drown. In some models the bees are held back from the main reservoir with wire mesh or sheet metal, being allowed into only a small area. In others they are allowed directly into the reservoir but floats are in place so the bees always have secure footing.

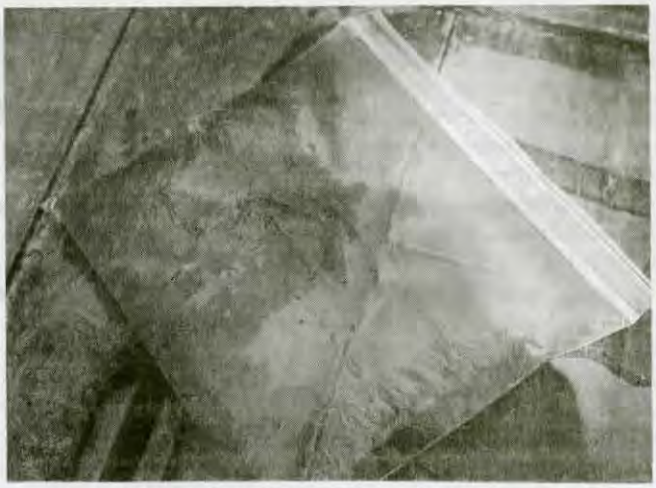
The trough style is relatively expensive, costing about the same as a super with frames.

The Baggie Feeder

The baggie, an idea that has been around for a number of years, has recently seen revived interest. It too requires only a single piece of permanent equipment, that is, a super or box of some type with a bottom. At least one supplier is offering a baggie feeder – a box similar to a shallow super but not as deep. Some beekeepers use a super with a queen excluder fastened in place as a bottom. Actually, a super of any depth resting on the inner cover will serve.

The syrup container itself is a heavy duty plastic bag (one or more, depending on size) such as is commonly used for food storage. Zip lock bags are usually suggested, but I have successfully used an ordinary bag, carefully fastened with a twist tie.

In use, the bag is about seven eighths filled with



A sealed bag feeder is placed on the top of the inner cover and two fine slits are cut in it, on the top.

syrup and then sealed, with no air left inside. The seal must be tight. After the bag has been laid flat in the hive, a two or three inches long razor slit is made, very gently , on the upper surface. With large bags more than one slit may be made, but always on the top surface. When done carefully these slits remain more or less closed, and being on the upper surface of the bag, syrup does not leak. The bees find the slits and line up along them to take the syrup. Bags of any size will work, but to feed efficiently, larger is better.

The commercially available version, which costs about the same as a trough style feeder, appears to hold two one-gallon bags.

Now, are you ready to feed your bees if they need it? One of the styles above will work for you. Keep in the back of your mind that our bees are more stressed these days because of mites and related problems. A side effect of stress is less foraging efficiency. Feeding should not be thought of as a nuisance. Look at it as an essential part of hive management. Don't have a situation where the bees survive the mites but die of starvation over the winter ahead. BC

Richard Bonney is an Extension Educator for the state of Massachusetts. He is a regular contributor to these pages.

WHY BEES?

Marion Ellis

Ask any beekeeper, "What is the biggest problem beekeepers face?" and you will get an eclectic eulogy of all the ills which befall us. Bee vermin, bad genetics, and agrochemicals, usually top the list. One item that has received only scant attention is the steep decline in the number of persons who keep honey bees. However, this decline may prove to be the most damaging to beekeeping if not reversed. Can we sustain our anti-dumping measures if we can't produce enough honey to satisfy the market? Will farm programs include beekeepers if they are perceived as beneficial to only a few survivors? Why support research if there are only a few people left to benefit? I may be guilty of overestimation, but I don't think so. This trend has serious consequences for apiculture and deserves our attention.

After mulling over this troubling thought for a while, I started thinking about why anyone would want to keep bees. My thoughts propelled me to the library to seek the wisdom of the ages on the subject. Here's a sampling of what I found:

Postmaster Anthony Frank, at the first-day-of issue ceremony for the honey bee U.S. postage stamp, "Now here is an insect that teaches us two of life's most important lessons; one is not to be idle, and the other is not to get stung."

William Shakespeare in King Henry V, "For so work the honey bees, creatures that by a rule in nature, teach the art of order to a peopled kingdom."

Sue Hubbell in A Book of Bees answers the why bees question nicely. "For a long, long time - for nearly forty years - I never had any bees. I can't think why. Everyone should have two or three hives of bees.... I have kept bees now for fifteen years, and my life is better for it."

Lorenzo Langstroth, whose invention revolutionized beekeeping, wisely guided the growing industry by his counsel. The following invitation to beekeeping was given by him when he released his book, Langstroth on the Hive and the Honey Bee, in 1853. "I have determined in writing this book, to give facts, however wonderful, just as they are; confident that in due time they will be universally received; and hoping that the many wonders of the economy of the honey bee will not only excite a wider interest in its culture, but lead those who observe them to adore the wisdom of Him who gave them such admirable instincts."

Wow! After digesting what others have said about the "why would anyone want to keep bees" question, I began to list my own observations and experiences. Now, not everyone is going to want to be a beekeeper, nor should they. However, I am sure you have met, and will meet, people who should be beekeepers. Take time to encourage new beekeepers, especially young ones. This small act of kindness may shape the future of our industry more than many of the grand designs of those seeking to guide our industry. Here are a few thoughts to share when you extend an invitation to beekeeping:

Keeping honey bees allows one to be a part of the natural world that our tinsel and television society has hidden for many people. One cannot observe bees returning to their hives laden with pollen without wondering where it comes from, and beekeepers learn to recognize the plants that grace the countryside around them. Flowering plants have always brought joy to mankind; this effect is doubled when you are a beekeeper. Also, you cannot succeed with bees without understanding their biology and behavior. Human beings are a part of the natural world, and we share many of our genes with other living things. Can we truly know ourselves without an understanding of them? Honey bees provide a link to the natural world that will enrich your life.

Honey bees are superb teachers when trying to instill an environmental awareness and conservation ethic in young people. In learning about the importance of honey bee pollination, one realizes how living things depend on other living things and that, while a few insects are pests, many are essential to our survival. Honey bees teach young people to be patient and gentle. Hastiness and carelessness have consequences, and honey bees will teach you this lesson at a young age if you keep

them. Honey bees are superb teachers.

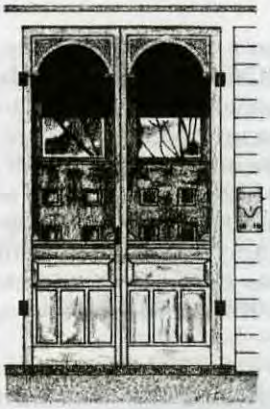
Honey bees teach their keepers the virtue of cheerful labor. Langstroth advised, "Place yourself before a hive, and see the indefatigable energy of these industrious veterans, toiling along with their heavy burdens, side by side with their more youthful compeers, and then judge if, while qualified for useful labor, you ought ever to surrender yourself to slothful indulgence." I have many fond memories of extracting, supering, putting on winter cartons, and other bee labors with my two children (too many according to them). Many modern parents entertain their children but often do not find opportunities to share useful labor with them. Honey bees provide ample opportunity to engage young people in meaningful work that will teach them valuable skills, give them confidence in their abilities, and allow them to earn spending money. The lessons learned from producing a product, learning how to prepare it for market, and perhaps, winning a blue ribbon at the county or state fair cannot be compared with assigning children mindless tasks such as emptying the trash to teach responsibility.

Honey bees have taken me out into wide-open spaces I would have never known without them. They have mired my truck in the mud in desolate places allowing my wife and me to share beautiful walks back to the paved road. They have introduced me to many wonderful beekeeping friends. I cannot imagine my life without bees. I have kept bees for nearly 30 years, and, like Sue Hubbell, my life is better for it.

A picture is worth a thousand words, and I have chosen a couple by Robert Becker, Lesa Becker, and Lesa's father, Ron Eley, to help convey my message. Beekeeping is a family affair for the Beckers and their five children. It all began with Lesa's father, Ron, who has kept bees for many years at his rural home near Firth, Nebraska. Lesa, a wonderful cook, was her dad's best customer, and occasionally, she would exhaust his supply and have to resort to buying honey from me. Well, as the story goes, my honey was pretty pricey, and not as good as Grandpa Ron's, so Lesa persuaded him to expand the number of hives and let her family assist with the work. It was not long after that Lesa was bitten by the bee bug. Her enthusiasm was contagious and infected her children. Soon a family tradition of helping grandpa with his bees was established and many good times were shared. Husband Robert, a cautious man, was not so sure about this bee thing, but he provided an important photographic record from a distance.

Lesa and Robert have used honey bees to build family ties and traditions. They have used Grandpa's honey bees to teach their children about nature, to be gentle, to work together, and to "adore the wisdom of Him who gave them such admirable instincts." They all finish each beekeeping year by working together to prepare beautiful entries for the Nebraska State Fair, including the photographs used to illustrate this story. This year they won the sweepstakes trophy, and each child won one or more ribbons. It doesn't take much imagination to see why the Beckers keep bees and their life is better for it. BC

Marion Ellis is Extension specialist in Apiculture for Nebraska.



Ann Harman

Home Harmony

From The Land Of Milk & Honey

You are probably aware that September is National Honey Month. However, since there are only 12 months to go around and there are lots of things to celebrate, September is also National Dairy Month. That is very appropriate since we talk about "the land of milk and honey." Besides, honey and milk, and its products, are very compatible.

During September you may find some promotional material at your supermarkets for either or both honey and dairy products. If anyone is handing out recipes, be sure to get them. If for dairy products, see if you can substitute honey in any recipe that calls for sugar.

Honey bees do help the dairy cows in that alfalfa - as hay it's a favorite food of cows- is pollinated by honey bees. However, to be fair, honey bees are not really enthusiastic about alfalfa. Therefore leaf-cutter bees and alkali bees, near relatives of honey bees, are more successful pollinators. I don't think the cow minds who pollinates as long as there is plenty of hay to eat.

As far as dairy products go, there's milk, of course, but there is also cheese. Now, before you start imagining some sort of awful combination of cheddar and honey, remember there are many kinds of cheese. Yogurt is a popular dairy product and combines well with honey. And if you want a quick easy spread for pancakes or waffles, you can just mix some butter and honey. Add a sprinkle of cinnamon if you wish.

BANANA AND HONEY ICE CREAM

A good way to have a celebration is with some ice cream. Although vanilla is always popular, why not try this next recipe for a different, delicious treat.

2 cups mashed ripe bananas
2/3 cup heavy cream
2/3 cup plain yogurt
2 tablespoons lemon juice
5 tablespoons honey
2 egg whites
toasted slivered almonds for decoration

Put the bananas in a bowl. Blend in the cream, yogurt, lemon juice and honey until smooth. Pour the mixture into a container, cover and freeze, beating twice at 45 minute intervals. Whip the egg whites until stiff but not dry then carefully fold into the banana cream after the second beating. Pour the mixture into a container. Cover and freeze until firm. About 30 minutes before serving, transfer the ice cream to the refrigerator. Serve each portion decorated with toasted slivered almonds. Serves 6

Ice Cream
Hilary Walden

ORANGE JULIUS

This next recipe is a refreshing drink that can be used for breakfast as well as any other time of day.

1 cup milk
1/4 cup honey
1 teaspoon vanilla
1 cup water
6 ounces undiluted frozen orange juice

Put all ingredients in blender and blend until smooth. Add 10 ice cubes and blend.

Kansas Honey Producers Cookbook

MANGO BREAKFAST SMOOTHIE

If you like mangoes you will certainly want to try starting your day with this drink. It's a good way to celebrate both dairy products and honey.

2 cups plain yogurt
1 teaspoon vanilla
3/4 cup orange juice, chilled
1 mango, peeled and cubed
1 teaspoon lime juice
1 tablespoon honey

Place all ingredients in a blender. Process until combined. Divide between 4 chilled glasses. Grate the lime zest on top for garnish. Serve. Makes 4 8-ounce glasses.

Williams Sonoma

APPLE CHEESE MUFFINS

I mentioned honey and cheese, even cheddar cheese. This next recipe uses both and are muffins with a difference. They are wonderful.

1/2 cup shortening
1/2 cup honey
2 eggs
1-1/2 cups all purpose flour
1 teaspoon baking powder
1-1/2 teaspoon baking soda
1/2 teaspoon salt
3/4 cup quick oatmeal
1 cup apple, chopped fine
2/3 cup sharp cheddar cheese, coarsely grated
1/2 cup pecans, chopped
1/2 cup milk
12 to 15 slices unpeeled apple
melted butter or margarine
cinnamon sugar

Cream shortening and honey. Add eggs, one at a time, beating well after each addition. Sift dry ingredients; stir into shortening mixture. Stir in oats, apples, cheese and pecans. Mix well. Add milk gradually, stirring only to moisten other ingredients. Fill well-greased muffin pans 2/3 full. Dip apple slices first in melted butter, then in cinnamon sugar. Press 1 slice into batter in each muffin. Sprinkle lightly with cinnamon sugar. Bake at 375° (for 25 minutes. Yields 12 to 15 muffins.

Honey Recipes
North Carolina State Beekeepers Assn.

Do you like cheesecake? This next recipe uses both honey and dairy products. The cheesecake has several layers with the fruit on the bottom for a change. If mangoes are unavailable, use any juicy fruit in season.

GRAHAM-SESAME CRUST

First, make the crust:
Graham crackers can be crushed

Continued on Next Page

HOME ... Cont. From Pg. 529

with a rolling pin, food mill, or blender. This crust is made with little fuss and has a nice nutty flavor.

1/2 cup butter
2 tablespoons honey
8 whole wheat honey graham crackers, crushed
1/2 cup sesame seeds, toasted
1/4 cup wheat germ

Melt the butter and honey in a small saucepan. In the pie pan, mix the graham cracker crumbs, sesame seeds and wheat germ. Pour the butter-honey mixture into the pie pan and blend the liquid into the crumbs until it is thoroughly absorbed and well distributed. Pat the filling evenly into the pie pan and chill. Fill with cheesecake or pudding fillings.

Honey And Spice
Lorena Laforest Bass

BAKED TROPICAL CHEESECAKE

Now for the cheesecake:

8 ounces cream cheese, softened or ricotta cheese
1 cup low-fat cottage cheese
1/2 cup honey
1/2 teaspoon vanilla
1 teaspoon grated orange or lemon rind
1 tablespoon cornstarch
2 eggs
1 mango, peeled and sliced

Topping:
1 cup sour cream or mock sour cream
2 tablespoons honey

In a blender, combine the cream cheese, cottage cheese, honey and vanilla. Blend until creamy. Add the grated orange rind, cornstarch, and eggs and blend thoroughly. Line pie shell with the mango slices, then pour the cream filling evenly on top of the fruit. Bake at 325° for 25 minutes. Beat the sour cream and honey together and spread gently over the top of the pie. Return to the oven and bake for an additional 15 minutes. Serve chilled.

Honey And Spice
Lorena Faforest Bass

Since this is National Honey Month look for ways to let the non-beekeeping public know about the delights of honey. Invite a friend to have a cup of coffee and some Apple Cheese Muffins.

Well, we've used milk, cream, butter, yogurt, cheddar cheese, cream cheese and cottage cheese along with our honey. That should make the cows moo with contentment and the bees buzz with delight.

INNER ... Cont. From Pg. 500

are an unknown, so far. Time will tell.

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Another item heard often was the number, and the kinds of beekeepers. As an example, Ohio, ten years ago had over 9,000 registered beekeepers. This year there were just over 3,500. That's a 60% drop, in bodies anyway. We're not so sure about how many colonies are gone. But when you lose bodies, you lose members, customers, volunteers, friends .... And this is not unique to Ohio. However, the bright side is that those who remain are the stalwarts of the art. The dedicated who, no matter the ordeal keep bees for the sake of keeping bees. Upon this foundation, great leaders say, will be built tomorrow's industry ...

Well, that's a bit heady for me, but there is a fundamental truth here. There are fewer of us, but we're the same old bunch, basically. And, there are some newbies here, too. Those who want to keep bees for the same reasons most of us do – fun, enjoyment, curiosity, money ...

Times have changed. We've changed. But life goes on, pretty much the same.

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Mark Winston's article this month continues a discussion about research, researchers and the products they produce – information.

This product is their bread and butter – promotions, tenure, prestige and position all depend on what they publish. The argument, my argument anyway, is that the information produced in the pursuit of tenure, prestige, promotions and position isn't generally shared, or explained to anyone other than those who sit in judgement of the work done.

And, although I still contend that those who pay the bills for the work done should get some direct compensation, I realize this isn't going to happen on a regular basis. Having a 'technical' researcher explain what his or her research means, and what it means to someone in the field is asking too much. Or so I'm told. There are exceptions, and exceptional researchers, however.

Further, the argument goes, this the researcher's argument anyway, the information is out there, published for everyone and anyone to read, to use, to interpret or to ignore. We, those of us on the practical side, are accused of ignoring the wealth of information available to us at any 'appropriate' library. It's a Mexican standoff I guess. Both sides have their points, and neither are bound to give in.

But there's a greater offence here. Greater than researchers disinclined to explain what they do, and Editors and beekeepers too time-stretched to glean these gems of research from not-so-obvious journals. And that offence is committed by the system created to perpetrate the crimes I have previously discussed.

The 'system' is, of course, the Administrators of the Universities those researchers work within. The Boards of Regents who oversee these administrators, the Legislature that funds the process, and the people who voted in the legislators who design the system as a whole.

Researchers are driven by their departments to 'produce', but the product isn't meant to be shared, only exploited. Good 'producers' bring in grants that continue to fund their research so their departments can spend the support money they would have spent elsewhere. It's greed, and survival, all in one.

We, those of us who vote, have created the system by constraining educational funds so Universities feel obligated to squeeze tighter and tighter on anything that 'costs.' Staff (professors, assistants, libraries, etc.) cost; facilities (buildings, football fields, parking lots) cost; and few of them bring in money (football *teams* and parking *permits* notwithstanding).

So whose fault is this communication gap? Ours for tightening the proverbial tax belt; Universities for reducing the 'Extension' mission of its researchers; mine, for not spending hours pouring over journals; and the researchers for not going the extra inch to share what they were 'granted,' or 'funded' to produce.

We need basic research, and we need practical research. But even more, we need to provide the resources, and incentives to make the two meet, and to share in that marriage.

Kim Flottum

Richard Taylor

Bee Talk

"Honey bees will be around for a long time, and so will good, dedicated beekeepers."

It was an expensive business getting my apiaries back to life after this most devastating year in the history of American beekeeping, but now it is starting to pay off as the harvest has gotten underway. I'm bringing in supers beautifully filled with comb honey – all basswood, apparently, so far. And that, like so many things about beekeeping, is puzzling, because, though I searched the basswood trees when they were in bloom, I saw no bees on them.

Anyway, seeing this lovely comb honey piling up in my honey house greatly revives my spirits, and I have been wondering whether this might not be the time, not to be selling off your bees and equipment, but to be buying more. All the major newspapers and other media have covered extensively the recent drastic decline in beekeeping. Beekeepers are discouraged. Many seem to be getting out. I suggest it might be just the time to be getting in. It is a buyer's market, and honey prices are soaring. Parasitic mites are here to stay, but solutions to this problem are in the making. I was talking to Dr. Roger Hoopingarner, an expert on these matters, recently, and he is confident that strains of bees increasingly resistant to Varroa are on the way, perhaps within a year or two. I feel, in any case, that the time has come for a brighter outlook to replace the widespread gloom of this past season.

I recently visited the apiary of Mr. David Laney, out in Indiana. Here is one of the ablest and most resourceful beekeepers to come along in a very long time. We strolled through his bee yard, no veils, peered into a few hives to note their progress, and here, it was obvious, was a beekeeper totally at home and at ease with his craft. His towering hives were filling with round-section comb honey. He had lost about half the colonies last Winter, but he got them all back into production with splits, and had obviously done everything exactly right. In addition to his skill at beekeeping, Mr. Laney, with the help of his son and daughter, has a vast honey distribution business, selling through stores as far flung as Michigan, Illinois and Tennessee. The strength of his business is the variety of very distinct nectar sources. Nothing is overheated or filtered.

I came away with one splendid idea, which I am eager to pass along. Mr. Laney makes his "grease patties," if they can be called that, simply by dumping granulated sugar into a bucket and adding vegetable oil. The ratio is about three parts sugar to one part oil, by volume. Let it set overnight and you've got just what you want – a nice smooth mix. Or, if there is still some oil on top, you can add a little more sugar. Then you just take this bucket to the apiary and ladle portions onto the top bars in the brood chambers. I gave it a try when I got home, using canola oil, and it seems to be just the thing.

Beekeepers should have the Apistan strips in the hives by mid-August. Early September might be too late, but in any case, you should not put it off longer than that. Maybe in the more southern states you can wait a bit longer, but not up here. You've got to get the honey harvested first, of course, and don't worry about not getting the Fall honey crop. Actually, the bees will put that Fall honey to better use than you can. If you get the mites under control, then the extra honey in the hives will not be wasted. The colonies will be all the stronger in the Spring because of it.

The rest of getting ready for Winter consists mainly of protecting the colonies from wind, moisture and mice. I keep mice out by fixing a wedge of quarter-inch hardware cloth in the entrances and, just as important, getting the hives up off the ground. Mice are much less likely to get into a hive if it is a foot or more above the ground. This also helps, come Spring, to keep the entrances unobstructed by weeds. The wedge of hardware cloth can be left in the entrance all Summer, as it does not hinder the bees. That works much better than closing the entrance with a cleat, having only a small entrance notched out, because this obstructs ventilation and easily becomes clogged, which can cause suffocation. You want ventilation through the hive to prevent moisture from building up. I make sure there is some sort of crack near the top of the hive so moisture can escape. Leaving the inner cover hole slightly open works pretty well for that. I use my stapler to fasten a scrap of tar paper loosely over the entrance to keep wind out. The bees easily find their way around the edges. Finally, I slip a scrap of wood or a stick under the bottom board, at the back, to give the hive a forward tilt. This is wonderfully effective in keeping the bottom clear of dead bees.

Should you leave the Apistan strips in all Winter? The approved rule is to get them out after 45-56 days, so that makes it simple. Follow the rules. The important thing is to get them down into the brood nest, where the bees are going to cluster, so they will be in constant contact. Otherwise, they will be totally ineffective.

Honey bees will be around for a long time, and so will good, dedicated beekeepers. We need only to know what to do, and when to do it, and then, do it. BC

Richard Taylor is a philosopher & lifelong beekeeper who lives in the Finger Lakes region of New York. You can reach him at Box 352, Interlaken, NY 14847.

Questions?

Timing Is Everything!

Q **I have heard a lot about Autumn collapse of colonies from *Varroa*. I treated my hives with Apistan the third week of July and removed the strips a week after Labor Day and all nine hives survived the Winter. Perhaps beekeepers have been treating their colonies too late in the season.**

Edgar Childers
Sardinia, OH

A I think that is the lesson beekeepers must learn. This is going to mean foregoing the Fall crop, but to my mind, that is an improvement. The best use a beekeeper can make of the Fall crop is to leave it on the hives for Winter stores.

Holey Comb Honey?

Q **I harvested a super of circular section comb honey to find that the bees had left a hole at the bottom of every single section. Why would they do this, and what can I do with the honey?**

William Comstock
Penn Yan, NY

A This is idiosyncratic with certain colonies. It is not very common, but it is also not rare. Every year I have a few colonies that do this. Those holes are called "communication holes," and the bees make them as passageways. The holes do somewhat detract from the appearance of comb honey but, if the product is otherwise of good quality – that is, with light cappings, full weight, and good flavor – then it is still acceptable. There are worse colony idiosyncrasies; for example, the tendency of some bees to attach a bit of brace comb to the surfaces of the sections, so that some of the cappings get pulled off when the honey is taken from the super. That some bees make much better comb honey than others is a good reason for raising your own queens or, at least, finding a queen breeder who can give you the kind of queens you need.

Weak Colony Solution?

Q **Could I strengthen a weak colony in the Fall by adding a two- or three-pound queenless package? If such a booster package were simply dumped in front of the hive, would there be fighting?**

George Piper
Harwinton, CT

A This would, I think, be a bad idea for several reasons. First, it would be a very expensive way to try boosting a colony, not worth the cost by any reckoning. Second, bee companies do not like shipping queenless packages. And third, yes, I should think the bees would almost certainly kill each other off. A much better way to boost a weak colony is by feeding them a gallon of sugar syrup, when it warms up, but before there are significant nectar sources. This greatly stimulates the queen to egg laying.

Tracheal Mite Absconding

Q **Two years ago I was preparing my hives for Winter in September, and they seemed all right, but two days later the bees were all gone. There was honey in the hive but no dead bees. A neighbor had seen the bees leave like a swarm. Was this tracheal mites or *Varroa*?**

Duane Waltimyer
Brogue, PA

A When bees suddenly abandon a hive, as yours did, that is tracheal mites.

Making Creamed Honey

Q **How do you use the so-called double boiler equipment for making creamed honey?**

John Weil
North Stonington, CT

A The double boiler should not be called that, because it suggests, falsely, that boiling water has a place in processing honey. The equipment in question consists simply of a tank, large or small, surrounded by another, or with an enclosed cone in the bottom, enabling one to heat the water in the outside tank or in the cone, and thus heat the honey indirectly, thereby avoiding scorching or overheating. Actually, no heat at all is needed for making creamed honey. The best method is to wait until Fall, when the days are cool, and fill the honey containers with a fast granulating type of honey, such as clover, alfalfa or, best of all, goldenrod and aster. The process can be hastened by "seeding" the honey with a small amount of finely granulated honey and mixing it in thoroughly, but this is by no means necessary. The secret of creamed honey is rapid granulation, which results in fine crystals and smooth texture.

Questions are eagerly welcomed. Send them to: Dr. Richard Taylor, Box 352, Interlaken, New York 14847 (not to Medina), enclosing a stamped, addressed envelope for direct response.

Answers!

Richard Taylor

?Do You Know? Answers

1. **False** In general the American basswood or linden tree is not a dependable honey source each year. It is an excellent source of nectar in the eastern United States when it blooms, however, the tree does not yield every year and the flows are sometimes erratic.
2. **False** Bees gather both nectar and pollen from almond flowers, which is important for early spring brood rearing, however, honey from almonds is reported to be bitter in flavor.
3. **True** The tassels of corn plants produce vast quantities of pollen which is frequently collected by honey bees. Since the corn plant does not have nectaries, bees only benefit from the pollen which is available for a short period of time when the plant tassels.
4. **True** Purple loosestrife confines itself largely to wet areas. It blooms from June to September and produces a honey with a greenish appearance. It has a fair to good flavor, depending upon the location.
5. **False** Alfalfa is an excellent source of extra-light amber honey. It is not an attractive source of pollen, however, and pollen collectors are apt to neglect it in favor of better pollen sources in the area.
6. **False** The various species of maples and oaks are important floral sources early in the spring for stimulating brood production and colony development. Maples provide both nectar and pollen, whereas, oaks lack nectaries and furnish only pollen.
7. **True** Heather honey exhibits a distinctive property known as thixotropy. This honey is normally in the form of a gel. Upon being agitated or disturbed, the honey will become a liquid and pourable, but after allowing it to settle for several hours it will revert to its jelly-like form. Therefore, special extraction techniques are needed to remove it from a comb.
8. **True** None of these metals should be used for honey processing equipment under any circumstances, as they are easily corroded by honey; affecting honey color and giving it an off-flavor.
9. D) Buckwheat
10. B) 1
11. A) Tulip poplar
12. While cotton is an important source of honey, the extensive use of insecticides in the production of the crop, often results in extensive bee kills. Beekeepers as a result do not normally keep bees in the vicinity of the cotton fields.
13. Tupelo and California sage honey are high in fructose (levulose) and as a result, they are extremely slow to granulate or crystallize. They are often referred to as non-granulating honeys.
14. Advantages Of Stainless Steel:
    Practically insoluble to honey
    Does not cause off-flavors
    Cleans easily
    Relatively easy to weld
    Has an attractive appearance
    Disadvantages Of Stainless Steel:
    It is expensive
    Can be corroded if it is not properly cleaned
    Sometimes it is difficult to work into different shapes
15. C) Saw Palmento
16. F) Yellow Star Thistle
17. B) Willow
18. G) Milkweed
19. A) Mesquite
20. E) Golden Rod
21. H) Aster
22. D) Fireweed or Willow Herb

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

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

Gleanings

SEPTEMBER, 1996 • ALL THE NEWS THAT FITS

Pesticide Regulation Affected

FOOD QUALITY ACT PASSES. DELANEY CLAUSE GONE

The National Association of State Departments of Agriculture (NASDA) recently commended Congress and the administration for reforming the nation's pesticide regulation (H.R. 1627) and drinking water protection laws (S. 1316). H.R. 1627 ends a decade old debate on how to establish a scientific standard for setting pesticide tolerances, and S. 1316 recognizes whole farm/ranch natural resource management plans as a tool producers can use to protect drinking water sources.

"NASDA has sought changes to pesticide regulation for some time," Richard W. Kirchhoff, Executive Vice President and CEO of NASDA, said. "The Food Quality Protection Act of 1996 provides a process to establish uniform pesticide tolerances based on sound science rather than the outdated Delaney Clause."

H.R. 1627 replaces the zero-risk standard, the Delaney Clause, with a narrative "safe" or negligible risk standard which provides that a "reasonable certainty that no harm will result from the aggregate exposure to the pesticides chemical residue, including all dietary exposures and all other exposures for which there is reliable information." Kirchhoff said that the 10 fold safety factor included in the measure will assure the safety of infants, children, and other "at risk" populations.

"Protecting the health and welfare of the consuming public is the highest calling for state agricultural officials," he said, adding that "special efforts must be taken to ensure the safety of children."

Consideration of a pesticide's benefits could be used in the continuation of a tolerance for an eligible pesticide chemical residue if the pesticide protects humans from adverse public health risks greater than dietary risk, and/or the use is necessary for the production of an adequate, wholesome, and economical food supply. Pesticide benefits can not be used to register a new chemical.

The new law also provides for national uniformity for federal pesticide residue tolerances except in instances where a state successfully petitions EPA to set its own tolerance in response to a compelling local condition or an unreasonable public health risk in the state, or where a state wishes to set its own tolerance for a pesticide whose tolerance was established under benefits consideration.

Kirchhoff also applauded the changes made by H.R. 1627 to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Specifically he said the "provisions designed to correct the 'minor use' problem created by the 1988 FIFRA amendments would benefit agriculture production." With regards to minor uses, the new law would:

- Extend the period of exclusive use of data supporting a minor use registration by the original registrant;
- Require the Environmental Protection Agency (EPA) to provide additional time for the submission of residue chemistry data supporting registration or reregistration of minor use pesticides;
- Authorize EPA to waive data requirements for a minor use pesticide if it would not adversely affect risk assessment or have an unreasonable effect on the environment;
- Require expeditious review and action on complete applications for registration or reregistration of minor use pesticides;
- Require EPA to defer for 180 days a decision regarding a voluntary cancellation of a registration that might adversely effect the availability of the pesticide for a minor use;
- Require EPA to process an application for a minor use without regard to any pending request to voluntarily cancel a substantially similar pesticide use; and
- Establish a program at EPA to coordinate activities related to minor use pesticides.

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The Food Quality Protection Act repeals the Delaney Clause, a 1958 provision of the Federal Food, Drug, and Cosmetic Act with a zero-risk cancer standard for pesticide residues on processed food, and replaces it with a new safety standard of "reasonable certainty of no harm."

The new law will likely keep some pesticides used on the market that would have been lost under the Delaney Clause, but others may not survive the new standards.

The Delaney Clause prohibited the government from setting pesticide residue tolerances – maximum limits – for processed foods if the pesticides in question were linked to cancer, no matter how small the risk.

Delaney was passed when tests could only detect residues in parts per million, but now they can find parts per billion. This makes it almost impossible to find no trace of pesticides in processed foods.

The new law allows some pesticide residues in processed and raw foods, as long as they pose no reasonable risk of harm. It replaces laws based on '50s science with laws based on sound modern science.

A list of 90 food uses of 36 pesticides were scheduled to be phased out by the Environmental Protection Agency after a 1992 court ruling called for strict interpretation of the Delaney Clause. The 36 pesticides included some of the most widely used on the market.

The pesticides and their uses were to be phased out include alachlor, a herbicide used on soybeans and peanuts; benomyl, a fungicide used on apples, citrus, grapes, rice and tomatoes; captan, a fungicide used on grapes, plums and tomatoes; mancozeb, a fungicide used on cereal grains and grapes; and dicofol, an insecticide used on many kinds of fruits and tomatoes. Some of those pesticides have already been revoked.

The new law may prevent the loss of some of these pesticides or cause some uses that were revoked to be reconsidered.

But, some pesticide uses could be lost because of the new act. The law provides increased protection for infants and children by requiring tolerance settings based on their higher consumption of fruits and vegetables. In addition to cancer, the law considers residues' risk of causing nerve damage, birth defects and other reproductive harm. These higher and broader standards could cause some products to lose their registration.

The EPA already studies pesticides' effects on 22 sensitive subpopulations – different ethnic groups and age groups such as infants and children. Much of the new act is simply putting into law things the EPA already does, but some new tests will be added to provide additional protections to the consumer, .

The Food Quality Protection Act also includes a right-to-know policy that requires the EPA to annually compile and distribute a "generic booklet" to large retail grocers describing the risks and benefits of pesticides and how consumers can reduce pesticide exposure.

The protective chemical agents used in the beekeeping industry are unaffected, to date, by this new ruling.

ALMOND CROP HURT BY WEATHER, POLLINATION

California's 1996 almond production is forecast at 530 million meat pounds, up two percent from May's subjective forecast and up 43 percent from last year's crop. This forecast is based on an estimated bearing acreage of 410,000 acres. Production from the Nonpareil variety is forecast at 250 million meat pounds, up 52 percent from last season.

The average nut set per tree is 5,482, up 45 percent from 1995. The nonpareil average nut set is 4,963, an increase of 29 percent over the previous year's set. The average kernel weight for all varieties sampled was 1.85 grams, down three percent from last year. A total of 97.0 percent of the nuts sampled were sound.

Statewide, bloom reports varied from good to excellent. Cold weather and intermittent rain storms during February and March hampered pollination.

CHERRY CROP WAY DOWN IN '96

U.S. tart cherry production is forecast at 248 million pounds, down 35% from 1995 and down 15% from 1994. If realized, this would be the lowest production since 1991 when 189.9 million pounds were produced.

MI, the largest producing state, expects a crop of 180 million pounds, down 42% from last year's near-record crop and 14% below the 1994 crop. Unseasonably cool weather during spring got the crop off to a slow start. A prolonged bloom hindered proper fruit development. Poor pollination weather and a shortage of bees will limit potential statewide. Growers reported frost damage in the Southwest and West Central areas. In the Northwest, the crop escaped severe frost damage and is in good condition. Harvest began around mid-July, about a week behind schedule.

Production in NY is forecast at 25 million pounds, 22% less than last year. The crop is light as a result of poor pollination weather and a reduction in acreage. An increase in production was shown for UT, while all other States registered decreases.

U.S. sweet cherry production is forecast at 133,200 tons, down 19% from 1995 and down 36% from 1994. Increased production in CA could not offset lower production in the other states. If realized, this would be the lowest production since 1985 when 132,500 tons were produced.

The MI crop, at 22,000 tons, is 19% less than last year. Poor pollination conditions hurt crop prospects and May frost damaged fruit buds. Spraying schedules were interrupted by rains. Harvest is expected to begin one-to-two weeks behind normal.

OR and WA growers expect light crops in 1996. A cold snap in February followed by cool, wet weather during pollination limited these Western States' crop potential. Poor pollination conditions and reports of frost damage made for reduced prospects in NY and PA.

LARGE FARM NUMBERS INCREASE

The number of America's large farms – those with sales of $100,000 or more – grew sixfold in the past 25 years, increasing from 51,995 in 1969 to 333,865 in 1992, according to an Agricultural Brief, Large Farms Are Thriving in the United States, AB/96-1, released in early August by the Commerce Department's Census Bureau. During this same time span, the total number of farms declined from 2.7 million in 1969 to 1.9 million in 1992.

"Large farms are more likely than small farms to be operated by full-time farmers, receive government payments, be organized as corporations, and generate large returns," said Jeff Kissel, a Census Bureau analyst.

In 1992, large farms comprised less than 20 percent of all the nation's farms. However, they operated 54 percent of the total land in farm use and produced approximately 83 percent of all farm products sold.

According to data collected on farms from the 1992 Census of Agriculture, large farms and those with less than $100,000 in sales provide two distinctly different profiles as displayed in the following chart:

Item	$100,000 or more	Less than $100,000
Land in Farms (acres)	1,542	271
Value of Land and Buildings (dollars)	1,059,510	212,816
Value of Machinery & Equipment (dollars)	150,852	27,547
Value of Sales (dollars)	402,081	17,825
Grains (dollars)	125,806	19,873
Cotton & Cottonseed (dollars)	222,735	22,961
Tobacco (dollars)	115,933	11,418
Vegetables, Sweet Corn, & Melons (dollars)	332,264	10,631
Fruits, Nuts & Berries (dollars)	441,001	15,329
Nursery & Greenhouse Crops (dollars)	611,477	18,105
Poultry & Poultry Products (dollars)	544,452	7,549
Dairy Products (dollars)	221,848	40,646
Cattle & Calves (dollars)	182,538	9,917
Hogs & Pigs (dollars)	133,219	13,329
Government Payments (dollars)	17,171	5,080
Average Net Cash Returns (dollars)	83,812	1,836

Smokey Dents

Fall Feeding At It's Best – "Hi, my name is Smokey and I'll be your server today."

Display Index

The Trials & Tribulations Of Bootleg Honey.

Ed Hughes

Before my wife knew all the legalities of selling her honey, she sold it innocently and without guile from the front door and through small grocery stores in the Mountain West. The legalities showed up one day in the form of the Wyoming Honey police who demanded to know where her approved kitchen was.

We actually had an approved kitchen, but we didn't want the church to find out why their entry-way carpet felt like it had chunks of comb and honey in it.

We had used the church kitchen before they had actually given us permission. It had been our turn to cook the Thursday night Bible study dinner and we figured we could get a little honey processing in as well. We had plans for getting those chunks out just as soon as they gave us their official go ahead.

In the meantime, we had to lie and say we didn't have a special kitchen.

"Then you can't sell your honey in this state," he said flatly.

"How about Colorado?" Bobbalee asked.

"Nope."

"Mexico?"

"Nope."

"Olympus Mons isn't in Wyoming," she said sweetly, mentioning the largest volcano on Mars. "We should be able to sell there."

"Lady," he said calmly, "if I catch you at it, you'll be in serious trouble."

For the next couple of months, we waited patiently for the church secretary to remember to ask the pastor if we could use the church kitchen, but she always forgot. Four months after harvesting, Bobbalee was getting desperate.

"I've got to sell some honey," she said, looking into her empty pocket book.

Loading up the Chevette with 800 pounds of honey, we drove in the winter mountains of Colorado looking for skiers with a sweet tooth at flea markets. Our plan was to sell honey while there was daylight, then drive at night. With a long weekend ahead of us, we figured to sell a lot of honey.

Figuring to sell a lot of honey was our first mistake. The back end was so heavily loaded that the headlights never touched the road. Unable to see the road, I felt for the ruts and followed them. When in doubt, I'd stop, open the door and examine the pavement with the help of the car's dome light.

"It looks like these tracks curve here," I'd say, hoping to elicit and opinion from my fellow bootlegger.

"I can't believe we're still on a road," she'd say helpfully.

Our second mistake was to save money by camping. The campgrounds at the higher elevations were all snow covered, and the ones at lower levels were rain soaked. When we settled for a rain soaked one for our first night, it began snowing and snowed on until morning.

In the cold of the Chevette that first night, most of honey solidified and really didn't look very good. On the second night, we crawled into our sleeping bags with a few quarts of honey each, hoping to keep them liquid.

By Sunday morning, our last day, all our clothes were damp. Cuddling with cold jars of honey, we had slept little and we had not showered in three days. In the cheerfulness of the sunny Sunday flea market, we looked like zombies and most of our honey looked like lard.

Convinced that tasting the honey would get a customer to buy, Bobbalee took passing flea marketers by the arm begging them to open their mouths for a taste of honey. As the last day wore on, and we had sold barely six quarts all weekend, she seemed to hold their arms longer than they liked and I feared she would soon be wrestling them to the ground to make them eat honey.

Driving back home that night with 790 pounds of honey, I was in a good mood. First, I had figured out the headlight problem. By leaving them on high beam, they were so high off the road none of the approaching vehicles flashed their brights at me.

Second, I knew we would never make it in the honey business. We would have to get real jobs, sleep in a warm bed, drive with our headlights pointed on the road, and eat our own honey in the privacy of our unapproved kitchen.