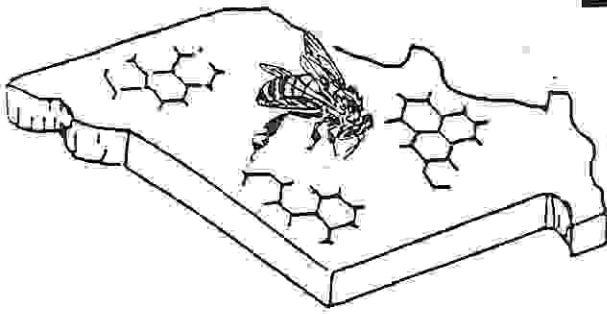


MISSOURI STATE BEEKEEPERS ASSOCIATION



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SUMMER 1993

PRESIDENT'S MESSAGE

During the last two months (March and April) I have been interviewed three times by the news media on the honey price support. The news media all seem to be supportive and understanding of the fact that the honey subsidy is paid to keep pollination for the consumer. The problem is that the politicians don't seem to understand, and I think we are going to lose the price support. If every beekeeper would contact their Senators and Representatives we might be able to save some of it.

So you say that you are a small beekeeper and don't care, but if the big beekeepers go out of business the price of beekeeping supplies will go sky high.

The rain has been coming down quite a lot around my house. If it doesn't stop soon I will have to get an ark for my bees. With all of the moisture the white Dutch clover sure looks good; all we need is a little dry weather and sunshine and you had better have your supers ready. Also the black locust has produced a lot of honey this spring. I hope you had your bees ready for it.

I had some losses this winter from the tracheal mite and cold weather and it has been hard to get my numbers back to last year's level, but the strong bees that I have now are bringing in lots of honey. This is the earliest I have ever had supers on. Every year seems to be different. I hope your bee hives are full of honey.

Glenn

P.S. Don't forget to let us know when you can work the State Fair. It seems early for that too, but it will be here before you know it.

FROM THE EDITOR

What a horrifying spring. I'm sure many of you have been through it already. Opening hives and finding frames full of honey, but few or no live bees. Not just in one hive, but in 20 or 30 or 50 percent or more of your colonies. I guess I was lucky and was in the 20 to 25 percent range. But what a sickening feeling to find what had been a strong hive the previous year, now reduced to a weakened condition or even nothing.

Where did I go wrong? What could I have done differently? Do those questions sound familiar? Many of you are probably past that stage now, and living with the problem, coping and making it part of your routine business. If I am to continue in beekeeping, I guess it will become a routine part of my business, too.

Where did I go wrong? Probably in assuming that I was not due to get mites for another year or two. Bad assumption. They seem to be here now, both kinds. I have seen varroa on drone brood, and I suspect that I also have tracheal mites. What could I have done differently? I could have had samples checked last year for the presence of mites. If they had been detected, treatment last year could have saved me much of the grief I went through this spring when doing my initial inspection of hives.

At a recent meeting of the Boone Regional Beekeepers' Association I was talking to a recent addition to our beekeeping group. We were talking about bees and mites. The mites weren't a new problem to him. He accepts them as a part of beekeeping the way it is being taught today, just as I had accepted the foulbrood diseases when I started.

I wasn't around when foulbrood became a major problem for beekeepers, but I imagine the feelings were pretty much the same then as they have been recently toward mites. The older beekeepers felt that foulbrood would ruin the beekeeping industry, but newer beekeepers jumped right in, knowing they would have to contend with foulbrood. Now nobody seriously takes up beekeeping without considering how to control at least American foulbrood and mites too.

Foulbrood is relatively inexpensive to treat compared to the treatments for varroa and tracheal mites. An article elsewhere in this newsletter talks about current and possible future control measures for mites. Maybe the best we can hope for now is that a variety of treatments and competition will drop the price of mite treatments and maybe even make them unnecessary. We'll keep our fingers crossed, but in the meantime try to remember why we started keeping bees in the first place; not because it is an inexpensive hobby, but because it is something we enjoyed. Bees should be fun.

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MISSOURI STATE BEEKEEPERS ASSOCIATION
1993 FALL MEETING OCTOBER 9, 1993
MERAMEC CAVERNS
STANTON, MISSOURI

***** NOTICE ***** NOTICE ***** NOTICE ***** NOTICE *****

THE MISSOURI STATE BEEKEEPERS ASSOCIATION WILL HOLD ITS 1993 FALL MEETING ON OCTOBER 9, 1993 IN STANTON, MISSOURI AT MERAMEC CAVERNS.

THIS WILL BE A VERY UNIQUE MEETING BECAUSE IT WILL BE HELD IN A VERY UNUSUAL AND SPECIAL FACILITY THAT WILL CREATE A SPECIAL ATMOSPHERE FOR A BEEKEEPERS MEETING. WE WILL ACTUALLY HOLD OUR MEETING IN A THEATER IN THE CAVE THAT HOLDS ABOUT 400 PEOPLE, SO THERE WILL BE PLENTY OF ROOM FOR VENDOR DISPLAYS. THE CAVE WILL BE HEATED SO THERE IS NO NEED TO WORRY ABOUT BEING COLD. THERE IS A MOTEL AND CAMPGROUNDS ON THE PROPERTY AND ADDITIONAL MOTELS IN NEARBY SULLIVAN. THE PHONE NUMBERS AND RATES ARE LISTED BELOW.

WE HAVE TWO EXCELLENT SPEAKERS WHO WILL BE COMING FROM TWO WELL KNOWN UNIVERSITIES. DR. KEITH DELAPLANE IS ASSISTANT PROFESSOR AND EXTENSION ENTOMOLOGIST AT THE UNIVERSITY OF GEORGIA. DR. DELAPLANE'S EXPERTISE IS IN THE AREA OF MITE RESEARCH BUT IS AN AUTHORITY IN ALL AREAS OF BEEKEEPING. DR. JOHN SKINNER IS ASSISTANT PROFESSOR OF ENTOMOLOGY AND PLANT PATHOLOGY AT THE UNIVERSITY OF TENNESSEE. DR. SKINNER SPECIALIZES IN POLLINATION RESEARCH BUT IS ALSO AN AUTHORITY IN ALL AREA'S OF BEEKEEPING.

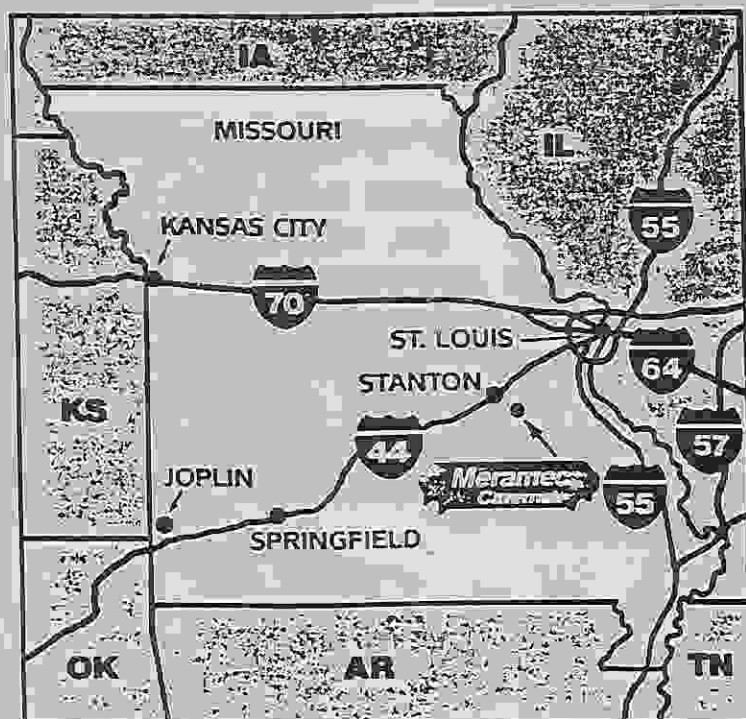
THERE WILL BE PLENTY OF ACTIVITIES FOR SPOUSES AND CHILDREN DURING THE MEETING. WE WILL RECEIVE A DISCOUNT ON THE CAVERN TOURS. THE RATES ARE \$6 FOR ADULTS AND \$3 FOR CHILDREN (5-11). THERE IS ALSO A NEW SUPER WAL-MART AND BUD'S (A WAL-MART CLOSE OUT WAREHOUSE STORE) IN SULLIVAN. CAMPGROUND RATES ARE \$7 FOR PRIMITIVE (NO HOOKUPS), \$10 WITH ELECTRIC HOOKUPS.

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DETAILS ABOUT THE AGENDA AND THE EXCELLENT LUNCH THAT WE WILL HAVE ON SATURDAY WILL BE IN THE NEXT NEWSLETTER.



Minutes of the Membership Meeting
of the Missouri State Beekeepers'
Association held 3/6/93

Motion by Francis Shidegger to approve the minutes of the last meeting.

Treasurer's Report by Ron Vivian

beginning bank balance
10/8/92 \$4701.37
income 3321.42
expenses -3953.47
ending balance 3/5/93 \$4069.32
Motion to approve treasurer's report by Luther Blair; seconded by Wilbur O'Neill; motion passed.

Old Business

Motion by Luther Blair for a honey queen program for Missouri; seconded by Milton Wright; motion passed.

Motion by Mickey Lee to change the wording on the proposed rules for certification of European Honey Bee queens from "marked and clipped" to "Marked or clipped." Seconded by Luther Blair.

Amendment by Luther Blair to leave to Joe Francka further wording changes necessary for legal requirements. Seconded by Francis Shiedegger. Amendment passed. Motion passed.

New Business

Motion by Jim Thaxter to meet in Joplin in October, 1994, and invite neighboring state beekeepers. Seconded by Sharon Gibbons. Motion passed.

Motion by Francis Shiedegger that two names; Glenn Davis and Neal Bergman be sent to the Secretary of Agriculture to be on the nominating committee to pick members for the National Honey Board. Seconded by Ray Batton. Motion passed.

Motion by Francis Sheidegger that donations be made to the American Beekeeping Federation and the

American Honey Producers Association. Seconded by Jim Thaxter. Motion passed.

Announcements

We can pass the hat for a contribution for the Ozark Empire Fair. Ron Vivian is taking donations.

Beekeeper of the Year award will go to Larry Hensley. Service award to Roger Nichols.

Call for help at the state fair. We will protest the rise in fees. Those who want to be listed in the AgriMissouri list must let Sharon Gibbons know by April 15.

There is an AgriMissouri promotion at the Governor's conference and legislative buffet. Sharon asks for volunteers to help with this.

The next meeting will be October 9 in Merrimac Cavern. There will be an auction, awards banquet and group tours of the cavern.

Tom Webster deplores the lack of a bee specialist position at the State University to do research and teaching. These positions are obtained by lobbying and he suggests that the state association do this.

Motion to adjourn by Jim Thaxter; seconded by Steve Moller.

*Submitted by Pam Wright, Secretary,
MSBA*



FROM THE QUEEN COMMITTEE

The Missouri Honey Queen program is now moving into its next stage. This new stage requires your assistance if we are to continue to be able to find honey queens as well-qualified as Julie Batton. Most of you met Julie; we were indeed lucky to have found such a well-qualified young lady to represent us. This past year she traveled extensively and we received many compliments from individuals and organizations, including the folks from the Kansas Honey Queen Program, for our good sense in choosing Julie as our first honey queen. She is indeed a fine young lady. We wish her well in the future.

Now we all have to work earnestly together to find another young lady between the ages of 17 and 21 who will be qualified to represent us in 1994. Julie will preside over our honey queen activities at the State Fair this summer; we will try to recruit and have new candidates meet with her and our honey queen committee during the State Fair so that our new queen will be ready to assume her duties early in 1994.

By the time that you receive this newsletter we will have written every 4-H club in Missouri asking them to notify their members of our search. We will also send out to our local Missouri beekeeping associations another copy of our guidelines in the event that the first copy that was mailed to your association in June of 1992 was misplaced.

Your job, individually or by committee, is to help us follow up by contacting your local 4-H club to remind them of our letter, and/or to call and speak to any other association or organization that you may have in mind such as the local Farm Bureau or Rural Electric Co-op that

routinely have contests of their own and therefore should be helpful in supplying lists of individuals who we can contact for interviews. Don't forget to look within your own local associations for candidates--that's how we found Julie Batton.

We anticipate the majority of interviews will take place at the same time. It is expected that the fall meeting of the state association would provide the most convenient forum for most individuals on the committee and for the candidates. We must start now to find candidates for the selection process. We can't do it without you!

The following guidelines should be helpful (please call should you have a candidate or have questions):

1. The candidate should be between the ages of 17 and 21.
2. Single, never married, nor cohabited in lieu of marriage, nor pregnant, nor having been pregnant.
3. Judging will be in full length dress; this is not a beauty contest.
4. The candidate must furnish a 300-word essay on honey and make an oral presentation of said essay at judging.
5. Applications and rules will be mailed to candidates immediately as soon as we receive an inquiry.

Thanks in advance for your assistance. Your committee is ready to help. Call either Joe Yungwirth, (314)875-7640; Francis Scheidegger, (314)965-2410; Jim Thaxter, (816)263-2694; or Sharon Gibbons (314)446-0447 or (314)394-5395.

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MARKETING HONEY

In many ways, selling honey is similar to selling other products, but there are differences, too. Being the first vendor at the farmers' market with sweet corn or tomatoes absolutely guarantees initial sales. Be the first at the market with a new crop of honey, though, and it generates about as much excitement as snowballs in Alaska.

Differences

Honey is a popular item with some people, but since it is non-perishable, the first honey of the summer sells about as fast as the last. It is available year-round and doesn't need to be purchased the day it was harvested, so customers won't beat a path to your door like they will for strawberries or corn or other seasonal items. It is also a relatively low-use item. The average American consumes about 120 pounds of sugar in a year's time, but only one pound of honey. Most people buy three pounds or less at a time, but may do this several times a year.

This all-season availability can work to your advantage. Although honey sales are almost constantly slow, they are fairly steady throughout the year. It is not necessary to have the whole crop contracted for before it is produced; however, markets should be researched before jumping into full-time beekeeping. The existence of other honey producers in your area can definitely affect your potential sales. Certain seasons offer opportunities that can't be had with other forms of produce. Smaller containers can make nice stocking-stuffers at Christmas time. Attractive gift boxes can also generate sales for gift giving. Honey can be combined with other products for giving at Christmas. Many meat markets put

together baskets of sausage, cheese, jams and jellies, tea, crackers, and why not honey, too? Honey and bears are often associated with each other and a fairly standard honey package is a twelve-ounce plastic squeeze bottle in the shape of a bear. Stuffed toy bears have been popular in recent years and a bear full of honey could make a good companion for a toy bear as a promotional item.

Most produce is sold strictly by the pound or bushel in the fresh raw state. Honey's several different forms add to its marketability. Some people prefer comb honey, some extracted, some creamed or spun honey. Most people like light colored honey, but some prefer dark, and the amount a person buys depends on how much they use. A variety of container sizes and forms of honey are necessary to create the most sales of your honey.

Another big difference is pick-your-own sales. With honey, this is definitely out.

Similarities

Marketing honey also shares similarities with other farm products. The work does not end with the production, but continues into the marketing phase. Markets have to be found and maintained, and as with other products, marketing can be as much work as production.

Whether you are selling green beans, Christmas trees, or honey, the first requirement is to have a top quality product. Although honey is not perishable, it requires careful handling to prevent overheating, contamination with dust or debris, and absorption of atmospheric moisture. All these can affect the flavor, appearance, and acceptability of your honey.

Honey containers can convince people to buy your honey or to pass it by. I have seen honey packed in tin containers that don't allow any visual inspection. I feel that clear glass or plastic are much more attractive and let the customer see the color and clarity of the honey. Jars may be new or used, but if used, should only have contained a food product. In any case, they should be absolutely clean. Jar lids also need to be neat and attractive. A dented rusty lid can turn people off, as can one advertising the jar's former contents. I was at a market one time where another beekeeper was also selling honey. After several people told me they chose my honey because I had used new jars, I decided I would never try to cut expenses by using lids labeled for another product.

When selling honey to the public, federal law requires that it carry a label. The label can be as plain or fancy as you like, but must contain certain information by law, and should be attractive to the customer. The law requires the label to show the name of the product, name and address of the producer, and net contents of the package. Even though the label is a requirement and may seem like an unnecessary expense, it is a good form of advertisement. Anyone who uses that honey will see your name and think about you when the jar gets empty.

As with other products, you should convince people to buy your honey specifically. Stress its local origin. As a beekeeper you are somewhat an oddity to many people. Many customers have had a relative who kept bees at some time. This is a good opportunity to share experiences. Remember, however, to listen politely and respectfully to your potential customers' stories, no matter how outlandish they might be. Recollections of long-ago events may

become muddled.

Competition from other beekeepers in your area will have an effect on your sales and marketing strategies. It may be necessary to find your own niche and work on expanding and filling it. A beekeeper with 20 hives won't need as large a market as one with 300 hives. I market most of my honey directly to the consumer through fairs, a farmers' market, and sales from my home. I also sell some wholesale in jars for direct resale. There are advantages and disadvantages to each.

Reprinted from *Missouri Farm* magazine, Vol. 3 No. 4, July/August 1986.

GIVING YOUR HONEY LABEL APPEAL

Honey labels can be smart and look smart too. Recent legislative changes will lead to package redesigns throughout the food industry—including honey labels. Now is the time to enhance your product information, increase consumer appeal and sweeten your honey sales...all through smart labeling.

Research Results Reported

Research designed to gauge consumer response to color, words and graphical images on honey labels was recently sponsored by the National Honey Board. Research activities included group discussions and one-on-one interviews with women, ages 25 to 49, who were primary household shoppers. Here's what they told us.

A Honey of a Label

Above all other attributes, honey labels must convey QUALITY, PURITY, and NATURAL.

Promote your local address. Local honey is considered to be of higher quality and higher purity. In the case of honey, "Made in your town" has more appeal than "Made in America."

TO Bee or Not to Bee

Bees and bears are favorite graphical images for honey labels and receive more universal applause than flowers, fruit, honey combs or beekeeping images. But not just any bee will do. Bees must be cute, friendly and happy. Realistic bees caused consumers to be anxious.

Bright and Bold with a View

The general packaging trend is toward bright colors though there are no favorite colors determined specifically for honey labels. Shape your labels similar to the container and leave lots of room to view the honey.

Give us the Facts and Figures

Today's shoppers want information about how to store and use honey—even how to substitute for sugar. Always include simple tips on your containers. "Consumers buy honey for its great taste and its down-home qualities. Honey labels should convey a pure, natural and wholesome image."—Mary Humann, marketing director, National Honey Board.

It's the Law!

Final nutritional labeling requirements published in January will require businesses with gross food sales over \$500,000 to include a nutritional label on their food products. In addition, any product which includes a nutritional claim must include a nutritional label.

Whereas nutritional labeling for some products is quite extensive,

honey meets the criteria for a simplified version of the nutritional label. Honey has qualified for this simplified form because of the insignificant amount of nutrients found in honey. The simplified format requires the following nutrient information to be listed: total calories, total fat, sodium, total carbohydrate, sugars and protein. In addition, serving size and servings per container are to be included.

The serving size for honey has been set by the government at 1 tablespoon (21 g).

The FDA has established a very specific layout for the nutritional information. This includes rules on type size and how the information is to be presented. The nutritional information and simplified format above meets the FDA's guidelines for honey. Variations in specifications such as print style and point leading are allowed, as noted in section 101(9)(d) of the *Federal Register*, Jan. 6, 1993.

For more information on the nutritional labeling law, please call the National Honey Board office for the "Give Your Honey Label Appeal" brochure.

UPC Code

Uniform Product Codes, required by many retailers, allow automated check stands to optically read product information from the label. To obtain information on UPC, contact: Uniform Code Council, 8163 Old Yankee Rd., Suite J, Dayton, OH 45448, phone (513)435-3870.

Country of Origin

Like other imported foods, honey containers must legibly and conspicuously display countries of origin. According to the U.S. Customs Ser-

vice, labels must account for at least 75% of the foreign honey used or must list up to 10 countries of origin. If yours is U.S. honey only, listing the country of origin is optional. Check your state labeling laws for other requirements. For example: A honey blend that contains 10% U.S., 30% Chinese, 10% Canadian, 5% Argentinean and 5% Mexican honey would be labeled "A product of the United States, China, and Canada." Since Argentina and Mexico represent only 20% of the foreign honey, they can be omitted.

Don't Forget

Your name, city and state...and if space permits include your full address.

Need Assistance?

Standard honey labels are available from a variety of beekeeping supply companies. For a new and unique label design, select a design firm or outstanding design student from a local university.

If you would like the FDA to review your label, send the formula, quantity, dimensions of container and draft of label; or you can send a physical product sample to the FDA. It will take 60-90 days for the FDA to review your label. Information should be sent to: Center for Food and Applied Nutrition, FDA, Office of Food Safety Labeling, 200 C Street SW, Washington, D.C. 20204.



HONEY PROMOTION

The MSBA honey promotion committee has been busy attending events to promote your product. The committee, Sharon Gibbons chairperson, attends at least two events each year. The Governor's Conference on Agriculture is held in December at Tan-Tar-A resort at Lake of the Ozarks and An Evening With AgriMissouri is held in March in Jefferson City.

The Governor's Conference brings together a wide variety of people from across the state to discuss agricultural problems and opportunities. The program is conducted over a two day period and one evening's meal is a buffet served by most of the commodity groups of the state.

An Evening With AgriMissouri is directed at the state's general assembly to emphasize the importance of agriculture to the state and the wide variety of agricultural enterprises engaged in by Missourians. It also is a buffet meal served by agricultural commodity groups.

Both events feature hors d'oeuvres, entrees, and desserts. Groups involved range from small groups such as the Missouri Organic Association, to regional groups such as the Missouri Rice Council, to the larger groups like the Missouri Cattlemen's Association.

The Missouri State Beekeepers' Association has been participating in these events for the last 4-5 years, usually serving a salad with a honeyed salad dressing. Recipes are given out and there is usually a short opportunity to speak with people as they advance through the serving line.

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HONEY BOARD OFFERS NEW RECIPE LEAFLET

Breads and spreads made with honey are featured in the National Honey Board's new recipe leaflet. The recipes are delicious and easy to whip up--Honey Blueberry Spread, Spiced Honey Butter, Honey Currant Scones, Easy Honey Muffins and Honey Cream Cheese Icing.

The leaflet is ready for your next local promotion, state fair or to insert with your honey package. Beekeeping associations and supporters of the National Honey Board can order up to 500 recipe brochures free of charge. Additional brochures are available at 5 cents each.

To order your brochures, write the National Honey Board, 421 21st Ave., #203, Longmont, CO 80501. Or you may call Tina Tindall at (303) 776-2337.

The brochure is an attractive 8 1/2 by 11 inch page folded in thirds, printed in lavender and gold with caricatured bees and flowers. It contains cooking tips and buying tips for consumers, brief information about liquid, creme, comb, and cut comb honey, and the following recipes:

Honey Currant Scones

2-1/2 C. flour
2 tsp. grated orange peel
1 tsp. baking powder
1/2 tsp. each baking soda and salt
1/2 C. butter or margarine
1/2 C. currants
1/2 C. dairy sour cream
1/3 C. honey
1 egg, slightly beaten

Combine flour, orange peel, baking powder, soda and salt; mix well. Cut butter into flour mixture. Add currants. Combine sour cream,

honey and egg; mix well. Stir honey mixture into dry mixture to form soft dough. Turn dough onto floured surface; knead 10 times. Shape dough into 8-inch square. Cut into 4 squares; cut each square diagonally into 2 triangles. Place on greased baking pan and bake at 375 degrees 15-20 minutes or until golden brown. Makes 8 servings.

Honey Blueberry Spread

1/2 C. fresh or frozen blueberries, thawed
1/4 C. honey, divided
1/2 C. butter or margarine, softened to room temperature

Bring blueberries and 2 tablespoons honey to boil over medium-high heat stirring constantly; cook 3 to 4 minutes or until mixture thickens and is reduced by half. Cool. Blend in remaining honey. Beat in butter. Great for bagels, biscuits, and toast. Makes about 2/3 cup.

Spiced Honey Butter

1/2 C. butter or margarine, softened to room temperature
1/4 C. honey
1 tsp. grated orange peel
1/2 tsp. ground cinnamon

Combine all ingredients and mix well. Serve with biscuits, bread, muffins or scones. Makes about 3/4 cup.

Easy Honey Muffins

Honey gives these breakfast treats rich color and moist texture.

1/2 C. milk
1/4 C. honey
1 egg, beaten
2-1/2 C. buttermilk baking mix

Combine milk, honey and egg; mix well. Add baking mix and stir only until moistened. Portion into greased muffin tins. Bake at 400

degrees F. 18-20 minutes until wooden pick inserted near center comes out clean. Makes 10-12 muffins.

Variation:

Cinnamon Apple Muffins: Add 2 cups pared, chopped apples and 1 teaspoon ground cinnamon to basic recipe. Bake about 5 minutes longer than basic recipe. Makes 12 muffins.



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SHAKE UP YOUR SUMMER WITH HONEY

The National Honey Board also offers these cool summer beverages to try using your favorite honey.

Banana Yogurt Shake

1-1/2 C. lowfat milk
2 medium, ripe bananas, peeled
1 C. plain yogurt
1/4 C. honey
1 tsp. vanilla extract
1/2 tsp. ground cinnamon
Dash ground nutmeg
5 ice cubes

Combine all ingredients except ice cubes in blender and blend until thick and creamy. Add ice cubes one at a time and blend until smooth. Top with a sprinkle of cinnamon, if desired. Makes 4 servings. Vanilla yogurt can be substituted for plain yogurt and vanilla extract.

Iced Mexican Chocolate

2 squares (2 oz.) unsweetened chocolate, melted*
1/3 C. honey
3 C. lowfat milk
1/2 tsp. each grated orange peel and ground cinnamon
Ice cubes

Microcook chocolate in large liquid measure at HIGH (100%) 2 minutes until chocolate is melted; stir in honey. Microcook at HIGH 30 seconds. Slowly stir in milk until well blended. Stir in orange peel and ground cinnamon. Pour over ice in serving glasses. Makes 4 servings. *Four tablespoons cocoa can be substituted.

FIGHTING FOR SURVIVAL AGAINST BEE MITES

Chemical Controls Keeping Beekeepers Afloat

Everything seemed fine last summer when Jerry Stroope prepared to extract honey from his 4,400 bee colonies in Texas.

But as his employees began examining the hives, they found that some colonies had been wiped out completely--and that in others, there were only a handful of bees left, covered with deadly mites.

Stroope said he lost from 25 to 50 percent of his colonies to a mite called varroa, which he's now controlling with a chemical called fluvalinate. Without it and other miticides, he says, "we'd be out of business."

Stroope's experience has become a familiar one for honey producers since the mid-1980's, when varroa and a second pest, the tracheal mite, were discovered in the United States.

The tracheal mite, *Acarapis woodi*, was first found in Texas in 1984 and has now infested bee colonies throughout the country. The mite lives, feeds, and reproduces inside the bee's breathing tubes, blocking oxygen flow and eventually killing the bee, says William T. Wilson, an entomologist with USDA's Agricultural Research Service in Weslaco, Texas. He estimates that 50,000 or more honey bee colonies have been lost each year since 1988 because of the tracheal mites.

The varroa mite, *Varroa jacobsoni*, was discovered in Florida and Wisconsin in 1987, according to Hachiro Shimanuki, who is in charge of the ARS Bee Research Laboratory in Beltsville, Maryland.

Varroa attacks both adult bees and larvae. Young mites developing in the brood cells suck the blood of bee pupae. A serious infestation of varroa mites can destroy a bee colony quickly with few visual warnings.

The mite problems couldn't have come at a worse time for the beekeeping industry. Not only have producers been fighting an ongoing battle against bee diseases, but in recent years China has stepped up its exports of less-expensive honey into the United States--undercutting prices of domestically produced honey.

Added to these problems, the mites are a one-two punch that floored some producers and knocked others out of business altogether.

Those who survived are controlling the mites with several chemicals, say Shimanuki and Wilson, who led research teams that studied the chemicals and helped gain Environmental Protection Agency (EPA) approval for their use. "Without these chemicals for controlling mites, I think we'd be finished," says Richard Adee, who's been raising bees since 1957.

Adee, president of the American Honey Producers Association, has about 45,000 bee colonies from the Dakotas to Mississippi, making him the nation's largest commercial beekeeper.

With a peak of about 50,000 bees per colony, Adee looks after more than 2 billion "employees." Without chemical controls, Adee says, he'd lose one-third of his bees to tracheal mites and 20 to 30 percent to varroa each year. "The beekeepers who are surviving are using chemicals and are using them preventively," he says. "Mites will continue to be their number-one problem."

To control them, ARS researchers have been working with private companies and beekeepers such as Stroope and Adee to register four compounds against varroa and tracheal mites.

ARS' research role has been to study the efficacy, residues, and toxicity of the mite controls, Wilson explains. "ARS researchers are making sure the chemicals really work against the mites and that they don't harm the bees or leave unwanted residues in the honey," Wilson says.

Before these chemicals were approved by EPA, the only way to stop the spread of the mites was to destroy infested beehives--a costly practice.

Three of the four chemical compounds have thus far gained EPA approval. They are:

○ Menthol. Registered in 1988 for use against tracheal mites, this natural substance, often used in cough drops and other products, kills mites without harming the bees. Since it has to vaporize to be effective, it must be used at temperatures of at least 60 degrees Fahrenheit--limiting its use in northern states. "But it has helped considerably against tracheal mites," Shimanuki says. "About 50 tons of menthol a year, on average, were used in beekeeping operations nationwide in the late 1980's."

○ Amitraz. Last November, EPA approved this compound under the trade name Miticur, which can be used in northern states and other areas where beekeepers need an alternative to menthol. Amitraz is widely used against a variety of insects, and is impregnated in plastic strips--like a cat flea collar--that are placed inside the hive. When bees walk over the strips, amitraz rubs off on them and kills both mite species without harming

the bees.

○ Fluvalinate. Approved for general use against varroa mites in 1988, fluvalinate is a synthetic pyrethroid that's used against beetles, moths, and other insects. Like amitraz, it's also impregnated in plastic strips that are placed in the hive.

Shimanuki and Wilson note that all these chemicals should be used in the spring or fall--before or after the main period in which bees gather nectar. Otherwise, chemical residues could wind up in marketable honey.

EPA approval is still pending for a fourth chemical, formic acid. In preliminary studies, Wilson says, it appears effective against both tracheal and varroa mites and is less expensive than the chemicals already approved for use. "It costs about 50 cents per colony to treat with formic acid, compared to \$2.50 or \$3 for the other chemicals," Wilson says, adding that further studies are needed to determine if formic acid residues could be spread to honey.

Beekeepers say holding down control costs is critical to their businesses.

Adee estimates that mite controls cost him about \$135,000 per year. Horace Bell, who operates about 40,000 colonies based in Florida, says treating for mites is a "Catch-22" situation. Using the chemicals raises the cost of the honey, making it more expensive than imported honey. But not treating for mites means certain loss.

"If you don't treat, you're dead," Bell says. "We seem to have a handle on how to control them. It's just a matter of the cost of doing it."

The mite problems are even more serious because of the crop-pollinating value of honey bees to U.S. agriculture.

USDA estimates there are 3.2 million bee colonies in the United States (a figure that includes only beekeepers with five or more colonies). In 1991, about 220 million pounds of honey worth about \$124 million were produced in the United States.

While honey itself is an important bee product, pollination services measure in the billions of dollars.

For fertilization to occur, pollen--the male sperm in plants--has to be spread from plant to plant. This cross-pollination occurs mainly through wind and insects.

Among insects, bees are the most efficient and dependable pollinators known. As they search for nectar and pollen, they spread the pollen among plants without damaging them.

Economic estimates vary on the value of honey bees as pollinators. A 1992 study by researchers at the State University of New York (SUNY) at Buffalo and Brockport estimated that they are worth between \$1.6 and \$5.7 billion a year to U.S. agriculture. Other studies place the figure even higher.

USDA estimates that U.S. farmers rent about 1 million bee colonies each year to pollinate a variety of crops such as almonds, apples, alfalfa, apricots, oranges, grapefruits, melons, cucumbers, asparagus, and broccoli.

About 400 agricultural crops worldwide--including 130 in the United States--are pollinated, at least partly, by honey bees, according to the SUNY study.

While the chemicals have given beekeepers a way to control mites, Adee and others worry that the mites will eventually develop resistance to them.

So ARS researchers are studying natural compounds to control the mites. Shimanuki, along with ARS entomologists Nicholas Calderone and William Bruce at Beltsville and University of Maryland researcher Gordon Allen-Wardell, have found naturally occurring compounds that kill tracheal mites. In preliminary lab studies, the most potent have been clove oil and citronellal, which is derived from sources such as lemons and lemon grass and is the active ingredient in the citronella candles common around summer picnic tables.

Clove oil killed 78 percent of mites tested, while citronellal killed 68 percent. "These numbers are promising, because we don't have to kill all the mites to obtain effective control," Calderone says. Field studies of clove oil and citronellal and other potential natural controls of tracheal mites are scheduled for 1993.

"We need to have as many weapons in our arsenal as we can against tracheal and varroa mites," Shimanuki says. "They're so threatening that we can't take any chances."

by Sean Adams, ARS

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BREEDING BEES FOR MITE RESISTANCE

Within the next year, ARS will step up its efforts to fight honey bee mites by releasing bees resistant to the pests.

This spring, the agency is releasing a new honey bee stock from Yugoslavia that has resistance to both tracheal and varroa mites. ARS researchers are also evaluating another stock, from England, called Buckfast, for resistance to tracheal mites and could release resistant bees in late 1993 or early 1994.

While it's common for USDA to release new plant varieties, the Yugoslavian bees are the first honey bees the department has ever released for breeding, according to Ralph Bram, the agency's national program leader for medical and veterinary entomology.

"Insect varieties have genetic traits that can benefit agriculture in the same way that different plant varieties have helped create crops with disease and insect resistance and other improvements," Bram says. "Releasing new bee varieties underscores how seriously we view the mites and how committed we are to helping the beekeeping industry solve the mite problem."

ARS and cooperating scientists have been studying the Yugoslavian bees since 1984. The project, initiated to find resistance to varroa, began three years before the mite was discovered in the United States.

But researchers found there was an added bonus: The Yugoslavian bees were also resistant to tracheal mites, according to geneticist Thomas Rinderer, who is in charge of the Honey Bee Breeding, Genetics, and Physiology Research Laboratory in Baton Rouge, Louisiana.

The Yugoslavian bees were brought to the United States in July 1989. They were observed for six months in a quarantine apiary on Grand Terre Island off the Louisiana coast to make sure the bees had no dangerous diseases or parasites that could spread to American honey bees. Once they were found to be safe, the bees were moved to the Baton Rouge lab.

Field tests began in 1990, to see if the Yugoslavian bees had more varroa mite resistance than U.S. honey bees. Rinderer says that the Yugoslavian bees are about twice as resistant to varroa mites as susceptible U.S. varieties. "As far as tracheal mites, they're not immune, but they are so resistant that beekeepers wouldn't have to treat their colonies for tracheal mites--just for varroa," Rinderer says. For a beekeeper, to save \$2 per colony in menthol treatments for tracheal mites is important."

Researchers at Baton Rouge also got good results from a 1991-92 study of the Buckfast bees, which Bram brought into the United States in 1990. The bees are named after the famous Buckfast Abbey, where Brother Adam, a 94-year-old monk, spent about 70 years breeding the bees.

After six months in quarantine, the Buckfast bees and several other varieties were evaluated in four states for resistance to tracheal mites, honey production, and other characteristics, according to Robert Danka, an entomologist at the Baton Rouge lab. He said the study's results confirmed earlier reports: Fewer than 10 percent of the Buckfast bees were infested with tracheal mites, compared to up to 80 percent for susceptible bees. Yugoslavian bees also had low infestation levels in the tests.

Danka says that further studies are being done before determining a date for offering breeders stock that incorporates the Buckfast resistance traits. He said the agency's agreement with the abbey prohibits releasing pure Buckfast bees in this country.

Last summer, ARS established a stock release panel that will select specific breeders to increase and maintain supplies of Yugoslavian bees and Buckfast crosses once they're released, says Rinderer. The panel consists of a chairman from ARS and representatives from four industry associations.

by Sean Adams, ARS

Ralph Bram is on the ARS National Program Staff, Agricultural Research Service, Bldg. 005, 10300 Baltimore Ave., Beltsville, MD 20705-2350. Phone (301)504-5771, fax number (301)504-5467. Thomas Rinderer and Robert Danka are at the USDA-ARS Honey Bee Breeding, Genetics, and Physiology Laboratory, 1157 Ben Hur Road, Baton Rouge, LA 70820. Phone (504)766-6064, fax number (504)389-0383.



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LYME DISEASE

Lyme disease was identified in 1975 after a high frequency of arthritis was found in three adjacent communities in Connecticut: Old Lyme, Lyme, and East Hadden. It also is distributed in Europe, Asia, Australia, Japan and China. The disease has been expanding its range in the United States and has been identified in many western states and along much of the Atlantic seaboard.

Outbreaks of Lyme disease are rare, but increasing. Although anyone outdoors can catch it, beekeepers are considered prime candidates because they often work in areas where ticks are prevalent.

The organism causing Lyme disease is the spirochete, *Borrelia burgdorferi*, associated with various species of ticks. It was first found associated with species of the hard tick in the genus *Ixodes*. The potential species that experimentally transmit the disease or harbor the spirochete, however, are large in number. It has also been found in deer and horse flies, as well as mosquitoes.

There are several main reservoirs of Lyme disease in nature. The white-tailed deer and white-footed mouse are primary hosts. Other mammals which may harbor the disease are chipmunks, raccoons, rabbits, horses, cows, and dogs. Again, the specific animals responsible for maintaining the disease as endemic in Missouri have not been established.

A major problem with Lyme disease is difficulty in diagnosis. Because it is such a new disease, many physicians may not yet be familiar with the symptoms, which are not clear cut and can be delayed. In addition, symptoms can mimic other conditions or worse, not be present at all in the early stages of the dis-

ease. This makes it incumbent on the victim to recognize tick bites and bring them to the attention of physicians--the link between symptoms and tick bites.

Typically, there are several phases of Lyme disease. The first symptom may be erythema chronicum migrans (ECM), an enlarged ring of redness surrounding a central puncture, the site of the tick bite. It usually disappears after four weeks, but can last for months. Although most commonly circular, the rash can be other shapes, including S-shaped. It usually does not itch, but may feel warm to the touch and is often followed within a week or two by flu-like symptoms including muscle and joint aches, fever and night sweats. Several weeks to months later, the second phase of the disease occurs in about 60 percent of cases and usually consists of joint pain (commonly in the knees), but also may involve neurological disturbances: headaches, meningitis, paralysis of facial muscles. Heart problems, dizziness and fainting may occur in some patients. The final and most serious stages may be observed several months to years after the initial tick bite. These include arthritis, intellectual deterioration or psychiatric disease.

If any of the above symptoms appear, a test is in order. Unfortunately, diagnostic tests are not 100 percent accurate. Antibodies in the blood do not appear in quantity until four to six weeks after being bitten. Antibiotics taken by the patient will also interfere with diagnosis. New tests are being developed, however, to test urine or spinal fluid for confirmation of Lyme disease.

The best course of action in the fight against Lyme disease is controlling tick populations and protecting oneself against bites. Areas

inhabited by deer (prime sources of mites) are to be avoided. Clothing should be buttoned and as little bare skin exposed as possible while working bees. Never sit on the ground in bushy areas and keep brush cleared and burned in well-travelled areas. After prolonged periods out doors, carefully examine your body for ticks. Ticks embedded in the skin should be gently removed by using tweezers as close to the mouth, where they are attached, as possible. It is better to remove a small amount of skin near the attachment than to break off the tick, leaving its mouthparts still attached to the skin. The latter can result in secondary infection and prolonged possibility of transmitting the spirochete.

Standard insect repellents can protect exposed skin, but ticks will often crawl to untreated areas. Ticks are seasonal and using chemical control to kill populations is difficult, requiring expertise for each possible species present. It is not recommended for the amateur.

From the Midwestern Beekeepers Association's newsletter. Joli Winer says parts of this article were taken from Apis, Vol 10, Number 2, Feb. 1992.

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CONTROL OF HONEY BEES IN AND AROUND HOMES

by Alton N. Sparks, Jr. and Philip J. Hamman

(The following is taken from a brochure published by the Texas Parks and Wildlife Department.)

Despite their value as pollinators and producers of honey and wax honey bees are generally unwelcome in and around homes because of their ability to sting. With the movement of Africanized honey bees into an area, it becomes even more important to reduce the potential for stinging incidents by removing swarms and colonies of bees from these areas.

Africanized and European honey bees are the same species, they look basically identical to the unaided eye, and distinguishing one from the other generally cannot be done in the field. Africanized bees are slightly smaller than European bees; however, the difference is so small that to get a positive identification samples must be collected and processed in the laboratory. Any unknown colony of honey bees in an area that has Africanized bees should be considered Africanized and all necessary precautions should be taken to protect yourself and anyone nearby.

There are three situations in which you may encounter honey bees; foraging bees, a swarm and an established colony. Each situation may require a different response. The one fact you should keep in mind is that honey bees are not aggressive; they do not search for something to attack. Honey bees are defensive and will attack anything that they feel threatens the colony or individual bees.

Foraging Bees

You may encounter a single bee, a small group of bees or even hundreds of bees foraging for food or water. These bees are away from the colony and are not likely to sting as they do not have anything to defend. In general, if you leave them alone, they will leave you alone. To prevent foraging bees from gathering in or around your home, remove or prevent access to any sources of food or water that may attract them. This will include any items that provide a source of sugar or water such as flowers, soda cans and water dishes. People wearing brightly colored clothing and perfume, cologne or aftershave lotion may also attract foraging bees because the bees' search for flowers is triggered by bright colors and sweet smells.

Protective Clothing

If you are going to work with honey bees there is some protective clothing you should wear, particularly if you are working with an established colony. Foremost is a veil. When bees are disturbed, normally they will attack first around the face and eyes. Make certain the veil does not have holes and does not touch the skin. Additional items include a hat, loose fitting coveralls (if they are tight-fitting bees can sting through them), leather gloves, and boots. When fully dressed, you should not have any exposed skin and any potential entry paths such as pants legs, pants pockets and shirt sleeves should be closed with tape, zippers or velcro.

Control of Honey Bee Swarms

A swarm of honey bees may cluster temporarily on almost any object such as a tree branch, mail box or fence for a few hours to several

days while scout bees search for a suitable nesting site. A swarm does not contain brood or food stores and the bees are unlikely to be defensive. Although a swarm is not dangerous and will generally move within a couple of days, this is the best time to eliminate bees if they are in an area where they are not wanted. One potential problem with a swarm around a home is there is a chance they could move into a wall if not eliminated.

In some areas, where Africanized bees are established, there may be local response personnel available to eliminate swarms at little or no cost. Another alternative is to have the bees killed by a commercial pest control operator, even though you will be charged for this service. If you choose to kill the bees yourself, you need to wear protective clothing. Honey bees are susceptible to a wide variety of insecticides, and can be killed with any of the commercially available products labelled for this use. Some of these sprays contain very low concentrations of insecticide and will work much slower than others. Aerosols containing one percent resmethrin or sumithrin have proven rapid and effective. However, when the bees are exposed, such as with a swarm on a tree, soapy water can supply very effective control with less likelihood of disturbing the bees and triggering the defensive response. A mixture of 1 cup of liquid soap in a gallon of water will effectively kill bees if they are completely coated with the solution. The soap serves to spread the water over the bees and basically results in drowning. The soapy water can be applied with a hand pump sprayer. If the swarm is located higher than can be easily reached with the pump sprayer, a hose-end applicator designed for spraying trees and shrubbery can be used with liquid soap in the spray receptacle. If

the bees are in some type of protected area and cannot be thoroughly covered, soapy water should not be used. If a swarm is sprayed during the day, it may be necessary to treat again at night to kill those bees that were away from the swarm during the earlier treatment.

Finally, swarms in an area indicate that a colony may be nearby. Usually a swarm will gather near the colony it left shortly after emergence. A careful search of the area while wearing protective clothing may be needed to locate the colony so that it may be eliminated and reduce the potential for further swarm problems.

Honey Bees in Buildings

Honey bees that have moved into a building should be removed as soon as possible. When a swarm enters a building, the bees begin to build comb in which to rear young bees and store honey. Only at this time, when the bees first enter, can they be killed without having to open the wall and remove large quantities of dead bees, wax and honey. The bees will still behave similarly to a swarm when they first enter the wall. If the colony has been in place for three weeks or longer, brood and food stores will be present in the colony and the bees are more likely to be defensive. An established colony must be removed after it is killed to prevent problems with the odor of decaying bees, attraction of other insect pests and staining by honey released within the wall as combs melt or are destroyed by other insects or mice.

If you have bees in a wall, do not block their entrance. Bees trapped in a wall will search for an alternate exit and may end up inside the building.

Control of Colonies

Established colonies of honey bees, especially Africanized honey bees, can react very vigorously to any disturbance and will attack any person or animal in their territory once they are disturbed. Any time you are working with an established colony you should wear protective clothing and insure that no unprotected people or animals are nearby. Africanized bees will defend a fairly large area and it would be best to not have any unprotected people or animals within 400 yards.

Prior to starting any control measures, you should know the location of the colony in the wall in relation to the flight entrance. In some cases, the colony nest is far enough away from the entrance that insecticides applied at the entrance will not reach the bees. The number of entrances should also be determined. The bees nest can be located by tapping on the wall at night and listening for the area of loudest buzzing sounds. Bees keep the nest center at about 95 degrees, a temperature high enough to warm the wall beside it so that you may be able to feel, as well as hear, the nest locations.

Insecticides may be the safest, quickest and most satisfactory materials for killing bees in buildings. Do not use fumigants or flammable compounds in structures. Carbaryl, pyrethrins, propoxur, malathion, resmethrin, sumithrin or vaponal are insecticides suggested for this use. The pyrethroid insecticides are often used for their rapid knock-down of the bees. The vaponal strip is quite effective in structures because the vapors can readily penetrate cracks and crevices, the bees are killed within a few hours, and there is not noticeable irritation of the bees which

is sometimes seen with the other insecticides.

Either dust or spray formulations can be used within a wall or other cavities; however dusts generally disperse better. Apply the insecticide at night through the entrance hole if the colony is fairly close to the entrance or the nest cannot be located. Otherwise, drill a hole in the wall above the colony and apply the dust or spray through this opening (the hole should be small enough that bees cannot exit and can be drilled from the inside wall thereby avoiding bees around the hive entrance). An extremely large colony may require an additional treatment after about 10 days to kill emerging young bees. As with swarms, if colonies are treated during the day, field bees that return after treatment will likely gather somewhere near the colony entrance and may require additional spraying. These bees can usually be controlled easily with the same approach used for swarm control.

After all sound and flight activity has ceased, or at least within two weeks, open the wall and remove all dead bees, combs and honey. These must be burned or buried because they are attractive to other bees and are toxic to both bees and people. Do not leave the honey and wax where other bees can reach it, or you may damage valuable honey bee colonies nearby. The location within the wall will be attractive to other swarms unless it is sealed tightly to keep them out. An additional application of insecticide will also help to prevent the entry of another swarm.

As with swarms, a good alternative is to have the bees killed by a pest control operator. In this case, you still need to be certain the dead bees, wax and honey are removed. It may be necessary to hire both a

pest control operator to kill the bees and a contractor to open the wall, clean out the bees and other material and repair the wall.

ADVERTISING INFORMATION

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BEE! I'M EXPECTING YOU!

by Emily Dickinson

Bee! I'm expecting you!
Was saying Yesterday
To Somebody you know
That you were due-

The Frogs got Home last Week-
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Birds, mostly back-
The Clover warm and thick-

You'll get my Letter by
The seventeenth; Reply
Or better, be with me-
Yours, Fly.

A guy came up to me once and said, "I got a boy. He's not too bright, and he don't get along with people-but you ought to hire him. He'd make a real good beekeeper." Jim Robertson as quoted in National Geographic, May 1993, Vol. 183 No. 5.

If you haven't seen this article yet, look it up. Several non-beekeepers have commented on it to me and how good they thought it was. It is an interesting account of migratory beekeeping with a fair mention of modern beekeeping problems.

NOMINATING COMMITTEE

The Missouri State Beekeepers' Association holds election of officers every year at the fall meeting. In accordance with the association's by-laws, the president and vice-president serve terms of two years. The vice-president succeeds the president. All other officers serve terms of one year, except board members who serve terms of three years. Vice-President Sharon Gibbons is the nominating committee chairperson. Anyone who is interested in serving as an officer should contact Sharon to be included on the nominating list in October.

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TO MEMBERS:

We are interested in each and everyone of our members. Although we cannot give each one the individual attention we would like; we try to make your membership meaningful and trust that it adds zest, pleasure and profit to your beekeeping endeavor. You may not even have bees, but your interest in bees and what the bees contribute to our nations economy will lead to prosperity for all.

If you have a few minutes, I would appreciate having a few lines from you, and you may be sure that it will make the job of editor more pleasurable. If you know of any beekeeper who does not belong to Missouri State Beekeepers Assn., please pass this newsletter on to them and encourage them to join.

Dues are \$5.00 per year. Make check payable to Missouri State Beekeepers Assn. If you belong to a local association, pay your dues through local treasurer.

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