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Basic Beekeeping Information
Michigan State University Cooperative Extension Service
F Folder Series
E.C. Martin, Entomology
Issued March 1952
5 pages

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Basic Beekeeping Information

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MICHIGAN ALWAYS RANKS among the "big ten" honey-producing states of the United States. The value of honey and beeswax produced is, of course, far exceeded by the contribution honey bees make in pollinating fruit, seed, and certain vegetable crops. The figures following indicate the status of Michigan's honey and beeswax industry.

- In 1951 there were 192,000 colonies of bees in Michigan; they produced 10,560,000 pounds of honey and about 180,000 pounds of beeswax.
- Average yield-per-hive for Michigan during the past 10 years has been 46 pounds. In a favorable location, and with proper care, Michigan colonies may be expected to yield 100 pounds to the hive.
- In 1951 there were 5,572,000 colonies of bees kept in all of the United States. They produced 259,000,000 pounds of honey; the average yield-per-hive for the past 10 years was 40 pounds.
- In 1950 and 1951, Michigan ranked 8th among the states in honey production.

**MICHIGAN STATE COLLEGE
COOPERATIVE EXTENSION SERVICE**

EAST LANSING

Cooperative Extension Work in Agriculture and Home Economics. Michigan State College and the U. S. Department of Agriculture, cooperating. C. V. Ballard, director, Cooperative Extension Service, Michigan State College. Printed and distributed under acts of Congress, May 8 and June 30, 1914.

Suggestions to New Beekeepers

The fact that honey bees are not domesticated makes their management more complicated. Study and experience is necessary to become a successful beekeeper. A beginner is advised to:

1. Work for or with a commercial beekeeper for some time.
2. Join the Michigan Beekeepers' Association and the closest local association—and attend meetings regularly.
3. Read the best journals, books, and bulletins on the subject.
4. Start out with 5 or less colonies of bees.
5. Buy or make only standard-size equipment.
6. Learn about *American foulbrood*, and the regulations and methods regarding its control.

Management of Colonies

Proper management of colonies is necessary for the production of a honey crop, which is simply the surplus produced by a colony in excess of its own needs. Poorly managed colonies often produce no surplus whatever, and may even fail to survive. A few brief suggestions on management are given here.

1. Early in the spring, colonies are weak in bees. During the period from early April to mid-June the colony must be so cared for that it will build up a maximum population of bees in time to gather a good honey crop. (A strong colony may contain 75,000 to 80,000 bees.) In Michigan, surplus honey comes largely from clovers during the period they are in bloom.

2. Beginner beekeepers are advised to examine their colonies briefly every week to 10 days, during the spring and early summer. The following points are essential for successful build-up:

- (a) Plenty of honey or sugar syrup, and pollen for feed. This point is essential—the queen will stop laying and the colony will not build up if the bees are short of food.
- (b) Presence of a good laying queen.
- (c) Freedom from *American foulbrood*.

3. Practice swarm-control measures, for two reasons: First, to prevent the colony from dividing and losing the strength which you built up in the spring; second, to keep the bees from getting

the desire to swarm. Colonies which are fretting to swarm don't gather honey; they just "loaf" in the hive. You can do these things to prevent swarming:

- (a) Remove queen cells from the combs every 8 days after they are first observed.
- (b) Reverse double brood-chambers once or twice during the spring build-up period.
- (c) Provide enough room in the brood-chamber, so that the queen always has empty cells in which to lay. Also add supers in plenty of time so that the bees do not have to crowd brood-combs by filling too many cells in the brood chamber with honey.
- (d) Practice some modification of the "Demaree system" of swarm control. This consists primarily of raising brood from the brood chamber to a super, a short time before the main honey-flow. Brood is raised to a super so that the colony will not feel crowded. (Details, and other methods, will be found in books and bulletins on beekeeping.)

4. "Package bees" from the South may be used to start an apiary. If packages are installed on drawn combs, containing honey and pollen, it is normally safe to place them out between April 1 and 15. If packages are installed on manufactured *comb foundation* and have to be fed sugar syrup and pollen substitute, it is advisable to have them arrive between April 15 and May 7. Colder parts of the state should choose the later dates. Never let package colonies run short of food.

Locating Your Apiary

Normally, commercial apiaries are located in the country, where bees will have access to large acreages of clover or other plants which yield nectar and pollen abundantly. Consider these points when locating your apiary:

1. Large apiaries should be at least one-and-a-half miles apart.

2. Keep apiaries away from public places. The bees may sting people or animals and get you into serious trouble. A high wall or hedge around a town apiary helps to keep the bees from flying

low over the heads of passers-by.

3. Don't, under any circumstances, neglect an apiary or leave used equipment exposed. This is an open invitation to serious losses through the spread of disease.

Wintering Bees

Bees can be wintered outdoors, or in cellars. There are four principles to successful wintering.

1. ROOM for the bees and their food. Two standard-size brood-chambers are recommended for outdoor wintering.

2. STORES of food available—at least 60 pounds of honey and several frames containing pollen. Sugar syrup may be used to supplement honey if necessary.

3. VITALITY—Re-queening annually or every 2 years helps to keep the colonies well stocked with strong, young bees for winter. It is good practice to kill off weak colonies in the fall and replace them in the spring by dividing strong colonies or by buying packages.

4. PROTECTION—Good windbreak is extremely important, but do not shut out the sun. Tarpaper wrapping with shavings, or some such insulation, helps the bees survive the winter. Upper entrances are becoming more popular.

Preparing Honey

Honey from different flowers varies in flavor, color, and other characteristics. For example, *buckwheat honey* is dark in color with a pronounced flavor, whereas *clover honeys* are light in color, with mild flavors. Naturally, some people prefer one type; others prefer another.

In addition to differences natural to honey, beekeepers may produce and prepare honey for sale in about four different forms.

1. SECTION COMB HONEY is served just as it comes from the hive. The wooden sections are made of such dimensions that, when properly filled with honey by the honey bees, they weigh about one pound. The wax of the cells is eaten with the honey, which makes it more "chewy" and attractive to many people.

2. CUT COMB HONEY is comb honey produced in larger combs, and then cut by the bee-

keeper to a smaller size. It is sometimes sold immersed in a jar of liquid honey. Other beekeepers wrap it in individual packages. Special thin foundation is used for all honey to be eaten in the comb.

3. LIQUID HONEY is "extracted" honey, sold to be eaten in the liquid form. The larger packers are now filtering some extracted honey for the liquid trade. This keeps it liquid for months. Some types of southern honey, in addition, which are high in *levulose sugar* are naturally very slow to granulate. Liquid honey is best for uses such as on breakfast foods, ice cream, and fruits. It can be served from a special honey dispenser.

4. GRANULATED HONEY is honey in which the *dextrose sugar* has formed into crystals. Most types of northern honey granulate within three or four weeks after being extracted. By gently heating a container of honey in a pan of water you can re-liquify it. Many people prefer honey in the granulated form. The industry would do well to foster its use, particularly if the honey has been granulated smoothly by the "Dyce process."

Pollination of Crops

Bees gather nectar and pollen from the flowers, using both products for food within the hive. Because the bodies of honey bees are covered with very minute branched hairs, the pollen grains stick to their bodies when they are working in the field. Pollen is thus transferred from flower to flower, and "pollination" takes place—a necessity in Nature's scheme for the production of fruit and seed of many of our important crops. For such crops it is as vital as soil, seed or sunshine—although it is the least appreciated and understood of all production requirements.

The honey bee has become the predominant pollinating-insect, and the only one that can be effectively controlled by man. The practice of placing colonies of honey bees in orchards is now generally practiced. The value of placing honey bees in clover fields is not as fully appreciated. The 5½ million colonies of honey bees kept in the United States carry on their work literally in every corner of the nation. Their overall contri-

bution in keeping the country fruitful is extremely great.

Beekeepers make their living from the sale of honey. It is very essential to the national economy that the honey market be prosperous, so keepers will stay in business to maintain the insect force that pollinates the nation's crops.

Disease Control

American foulbrood is the most important disease to which bees are exposed in Michigan; all beekeepers should learn how to identify it. If it becomes established in your area it can cause very serious loss, and can be easily spread to uninfected apiaries. These two common-sense practices will help control it:

First, never leave bee equipment exposed so "robber bees" from infected colonies can spread disease. Second, give full cooperation to apiary inspectors employed by the state of Michigan.

Beekeeping Literature

Books

Many hundreds of books have been written on beekeeping. The following are of general interest and value, and may be purchased from the publishers—or from most bee supply dealers.

The Hive and the Honey Bee by Roy A. Grout. (Dadant and Sons: Hamilton, Ill. 1949)

ABC and XYZ of Bee Culture by E. R. Root. (The A. I. Root Company: Medina, Ohio. 1950)

Beekeeping by E. F. Phillips. (The Macmillan Company: New York City)

Starting Right With Bees by H. G. Rowe. (The A. I. Root Company: Medina, Ohio)

American Honey Plants by Frank C. Pellett. (Orange Judd Publishing Co., Inc.: New York City, 1947).

Beeswax, by Huber H. Root. (The A. I. Root Company: Medina, Ohio. 1950)

Queen Rearing by H. H. Laidlaw and J. E. Eckert. (Dadant and Sons: Hamilton, Ill. 1950)

Honey in the Comb by Carl E. Killion. (Journal Printing Company: Carthage, Ill. 1951)

History of American Beekeeping by Frank C. Pellett. (Collegiate Press, Inc.: Ames, Iowa, 1938.)

Journals

There are dozens of American and foreign bee journals. Following are a few that are most popular in Michigan.

The Beekeepers Magazine. (3110 Piper Road,

Lansing 17, Mich.)

Gleanings in Bee Culture. (Medina, Ohio)

American Bee Journal. (Hamilton, Ill.)

Modern Beekeeping. (Paducah, Kentucky)

Bee World. (530/1, Salisbury House, London Wall, London, E.C. 2.)

Bulletins

Many bulletins on all phases of beekeeping have been published by the United States Department of Agriculture. In addition to these most states and bee supply companies have published bulletins and pamphlets. The following Extension bulletins and folders are at present available from the Bulletin Office, Michigan State College, East Lansing, Michigan.

"*Seasonal Management of Commercial Apiaries*." E-228. (R. H. Kelty)

"*Beekeeper's Guide to Seasonal Management*." F-2 (to accompany E-228). (R. H. Kelty)

"*Honey Flavor Harmonies*." E-213. (Ruth H. Hoover.)

"*The Importance of the Honey Bee to Michigan Agriculture*." F-152. (R. H. Kelty and C. M. Harrison)

Information and Assistance

Information with regard to beekeeping problems may be obtained by writing to one of the following agencies:

MICHIGAN STATE COLLEGE, Department of Entomology, East Lansing (E. C. Martin). *Extension*—Beekeepers meetings, letters of inquiry, assistance with association committees and general problems of the industry. *Research*—Honey flow data, pollination, etc. *Teaching*—Courses to degree students, short course students and beekeepers short courses when desirable.

MICHIGAN DEPARTMENT OF AGRICULTURE, Apiary Inspection Service, East Lansing (D. P. Barrett). *Apiary Inspection for Disease*—Registration of apiaries; legislation concerning disease. *Education*—Assistance at meetings, etc., particularly relating to disease problems.

BEE CULTURE LABORATORY, Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, Washington, D. C. (James I. Hambleton). Administers regional research laboratories in various states.

PRODUCTION AND MARKETING ADMINISTRATION, U. S. Department of Agriculture, Washington 25, D. C. (Harold J. Clay, and others). Marketing, grading, price stabilization, etc. Semi-monthly *Honey Report*, giving information on beekeeping conditions and honey prices throughout the country, may be obtained free on written request.

BEE SUPPLY COMPANIES. American Beekeepers have been fortunate in that most of the major supply companies have a strong beekeeping background and a real interest in the welfare of the industry.

Michigan is well supplied with bee supply manufacturers and dealers. A "List of Dealers in Beekeeping Supplies, Package Bees, and Queens" (Circular E-297, revised) is prepared by the Division of Bee Culture, Bureau of Entomology and Plant Quarantine, U.S.D.A., Beltsville, Md. This is very complete and may be obtained free on request.

Beekeeping Organizations

MICHIGAN BEEKEEPERS' ASSOCIATION. Holds meetings open to all beekeepers. A business meeting is normally held in December; a 2-day winter meeting at Michigan State College during Farmers' Week, and two regional meetings in July. A strong Association is vital to the welfare of the industry. Beekeepers enjoy the friendly contacts with other beekeepers and they keep better informed through attending meetings.

The Association, chiefly through its committees, provides the only means whereby action may be taken by beekeepers to collectively further their own interests. Every industry has fields for collective endeavour where individual action is ineffective. (Make application for membership to Otto H. Roth, Reese, Mich.)

LOCAL ASSOCIATIONS. Several counties or groups of counties have local associations which hold meetings one, two or three times during the year. These meetings are social, instructive and they carry on business of local interest such as making arrangements for honey competitions and displays at the local fairs. Information may be obtained from your County Agricultural Agent.

THE AMERICAN BEEKEEPING FEDERATION. The national organization representing all American beekeepers. This organization assumes the responsibilities of looking after beekeepers' welfare in such things as Washington representation to request floor prices, allocation of scarce materials, etc. Active committees also deal with pollination, honey grading, research problems and other aspects of the industry. Membership is available to State Associations, local Associations, and individual beekeepers. Annual meetings are held in different parts of the country each year. (Secretary: Glenn O. Jones, Atlantic, Iowa.)

THE AMERICAN HONEY INSTITUTE. Because honey sales constitute the backbone of the whole beekeeping industry, this organization is worthy of every support from beekeepers. The institute staff does a very good job on the limited budget available of studying new and better uses for honey, publishing honey folders and booklets, and advertising honey. (Executive Director: Mrs. Harriet M. Grace, Commercial State Bank Building, Madison, Wisc.)