



## 4-H Beekeeping Division II

Year in Project: \_\_\_\_\_

Date Started in Beekeeping II: \_\_\_\_\_

Name: \_\_\_\_\_

Club: \_\_\_\_\_

County: \_\_\_\_\_

# Working with Honey Bees

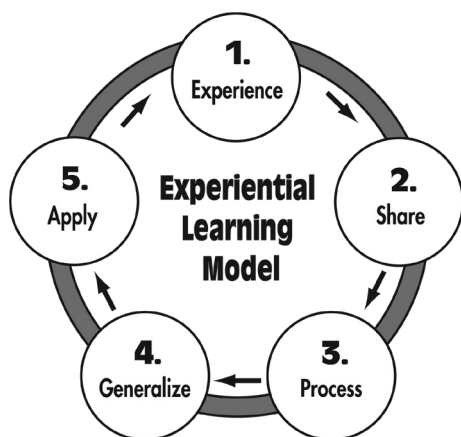
# 4-H Beekeeping, Division II: Working with Honey Bees

## Note to Parents and Volunteer Leaders:

The 4-H Beekeeping project helps youth learn about raising honey bees. Beekeeping offers many exciting educational experiences, from learning about bees and honey plants to learning to raise bees and produce honey.

The 4-H Beekeeping Project is divided into three divisions. Division I, *Understanding the Honey Bee*, covers information on the basic facts of beekeeping: the types of bees, the honey and wax they produce, the plants that attract bees, and the equipment a beekeeper needs. In Division II, *Working with Honey Bees*, youth acquire a colony of bees and learn how to care for their beehive throughout the year. This includes basic beekeeping operations that result in the production of extracted, chunk, or cut comb honey. When the youth are experienced and knowledgeable enough in the basic care of a beehive, they should move on to *Advanced Beekeeping Methods*. The advanced topics include: increasing the number of your honey bee colonies, increasing honey production, producing special kinds of honey, and learning more about the bee societies.

The learning experiences have been planned to initiate “experience centered” activities. Youth are encouraged to take responsibility for their beekeeping projects. They can enhance their learning by consulting resources on the Internet, at school, and at the library, or by talking to someone who raises bees.



**Experiential learning** distinguishes 4-H youth development education from many formal educational methods. Activities are designed so youth experience a learning activity, reflect on what they did (explore the meaning of the activity), generalize what they learned (to test comprehension and appreciation of the activity), and then think about how they can apply what they learned to other situations (generalize). You can help guide youth as they explore each activity by discussing each section.

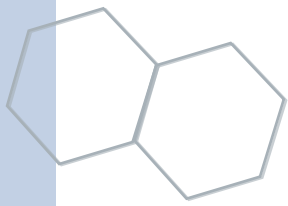
## Purpose

Division II Beekeeping is intended to help youth learn many things, including:

- how to care for their own beehives,
- more about the equipment that a beekeeper needs,
- how to compile beekeeping records,
- how to present the results of their work to others,
- how to develop inquiring minds—the habit of asking questions and searching for answers.

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# Working with Honey Bees

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# Working with Honey Bees

In Division I Beekeeping you learned about the honey bee and the equipment of the beekeeper from your manual and the book *The New Starting Right with Bees*. If you did not do Division I Beekeeping you might want to review the information in the manual. In Division II, we recommend you subscribe to a Beekeeper magazine such as *American Bee Journal* or *Bee Culture*, and you may want to get the book, *Honey Bee Biology and Beekeeping*. You will care for at least one beehive of your own throughout a full year's cycle of events. It might be better to begin with two hives of bees so you have the back-up resources of the other hive (brood, queen cells, honey, etc.) if something goes wrong with the first one. However, one hive is usually enough for a new beekeeper if keeping two is not possible.

There is a big difference between reading about the bees and actually working with them. When you work with bees, you must show initiative and responsibility if your hive is to succeed. You will have to make decisions about where to place your hive, what kind of bees to work with, and where to get them. You will have to inspect your bees to make certain that they are healthy and remain so. You will have to decide when to feed your bees in the spring and fall, when there is a danger of their swarming, and when it is necessary to "super" the hive. You will have to know how much honey you can take off of the hive and how to extract and market that surplus honey. If you make the right decisions in these situations, your bees will cooperate and produce a good crop of honey for you.

You will have many important decisions to make about your bees during the coming year. You are not expected to answer all of the questions on your own. Beekeepers of many years experience still turn to other beekeepers for advice when they must make difficult decisions. Now that you will have your own hive of bees, it is important for you to keep records and look to your beekeeping advisor for help.

Every beekeeper can vividly recall their first hive of honey bees: the problems, the questions, and the mistakes they made with it. If you turn often to your beekeeping advisor for suggestions, you will probably get answers for problems and questions you have about your first hive and avoid many mistakes that others have made. The first thing to do is to consult a beekeeping supply catalog. Once you have decided what you need, it will be necessary to get your hive parts and frames put together in time for your bees.

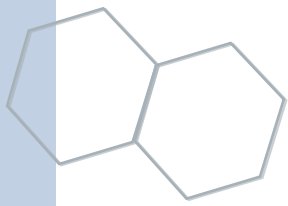
**NOTE:**

This manual, *Working with Honey Bees*, will help guide your beekeeping learning experience, but it's only one of many resources you'll need. Each section gives a brief introduction to a topic, then asks you questions. You will need to use additional resources to learn the things you need to know about beekeeping and to answer many of these questions. Your beekeeping advisors are the best place to start. They can discuss many of the topics with you and show you how to manage a beehive. They probably also have beekeeping books and journals that you can borrow.

If you are starting your own beehive, you should subscribe to a beekeeper magazine such as *American Bee Journal* or *Bee Culture*. Reading a journal helps you learn about beekeeping, current bee problems, and recommended solutions. Journals also will help you answer the questions in this manual. Order information for these and other resources are listed in the back of this manual (Resources). *The New Starting Right with Bees*, which you bought for Division I Beekeeping, will also have much of the information you need to start your beehive and answer the questions in this manual.



**This symbol lets you know that you need to use outside resources to answer a particular question.**



## Selection of Location

The first decision the new beekeeper must make is where to put the hive. There are different factors that make a beehive location successful. There are also other questions about location to consider. For one thing, try to choose a location that is as close to your home as possible. There are several reasons for this. The closer the hive is to your house, the more convenient your storage area will be and the less time you'll spend traveling to and from your hive. If they are nearby, you will be able to inspect them more often.

Occasionally, beehives are vandalized by thoughtless people who find a beehive in an isolated area an irresistible target for rock throwing or shotgun blasts. Therefore, having the beehive closer to your home or the home of some other responsible person provides greater security for the colony.

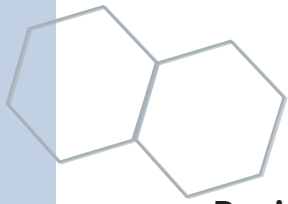
### Nectar

You need to make a careful study of available honey plants around a potential hive location. Honey bees get most of their nectar and pollen within a half-mile radius of their hive location. However, they can travel from one to two miles on their collection trips, depending upon the ruggedness of the terrain and the prevailing winds.

### Water

Bees, like all animals, need a constant supply of water. It is best if there is a stream or pond in the vicinity of the beehive. A good source of water is especially necessary if your beehive is to be located close to neighbors' homes. Otherwise, the bees may choose your neighbor's water faucet, the children's wading pool, or the bird bath for a source of water. To avoid having your bees become a nuisance, place a tub or pan of water near the hive, and your bees will learn to go only to that safe "watering hole." Make certain that the water source has something in it the bees can land on without danger of drowning, such as cork floats, bark, or layers of crushed rock.





## **Drainage**

There must be some water near the hive, but not too much. There should never be any possibility of the hive having to sit in water. Therefore, look for a spot with good drainage. Keep the hive off the ground using a hive stand or bricks and tilt it slightly forward. This will permit any moisture that may accumulate to run out the front entrance. Leaning the hive slightly forward also makes it easier for the bees to remove dead bees and other waste materials.

## **Sunlight**

When locating your bees, also consider available sunlight. Your hives should have as much sunlight as possible, especially during the winter months. Face your hive toward the south, where the entrance will have the greatest exposure to sunlight and will be protected from the cold north winds of winter. If your location makes it inconvenient to place the hives facing south, try facing them east to catch the morning sun.

## **Vegetation**

Finally, think about the vegetation immediately around your hive location. Trees to the west or north provide valuable protection from winter winds. You will want to keep the grass and weeds cut around your hive. This will reduce any danger of fire damage and provide good ventilation, which is necessary for the bees to maintain the proper hive temperature.

Name factors to consider when choosing a hive location.

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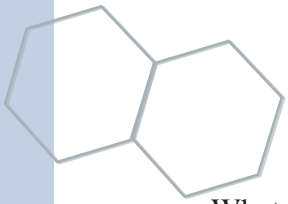
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What are the advantages of placing your hive near a stand of trees?

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What special considerations must be made by the backyard beekeeper with close neighbors?

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Can an area be overpopulated by honey bees? Explain.



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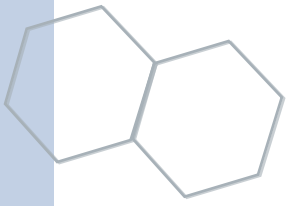
Describe a perfect beehive location.

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# Getting the Bees

Now that you have assembled your equipment and chosen your location, it is time for you to obtain your bees. There are several methods for getting bees to fill your hive: catch a swarm, buy an already established colony, buy a package of bees, or find a beekeeper to sell you a “nucleus” colony. A “nuc” consists of several frames of bees, brood, and honey with a queen.

What equipment do you need to get started in beekeeping?

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What is a swarm of honey bees?

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Briefly explain the steps in hiving a package of bees.



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Why is the queen in a cage when shipped in a package of bees?

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Explain the “feeder can” method of feeding sugar syrup to your bees.



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There are advantages and disadvantages to each of the methods for getting honey bees. Buying a “nuc” or nucleus colony is one good option if you can find a local beekeeper that sells them. This gives your colony a faster start than if you install a package, because you will already have drawn comb and brood. Also, a locally-bred queen may be better adapted to your weather conditions. Ordering a three-pound “package of bees” is another good method and it avoids some possible brood diseases. The beginning beekeeper learns a lot by observing the process of a package of bees developing into a full strength and producing colony.

Remember, if you plan to order a package of bees, do it soon enough so that it will arrive during April. It is best to start your hive in early April to allow more time for your colony to grow. Send in your package order as early as possible, preferably before the beginning of February. See the References section for more information about sources of bees.

Which race of honey bee do you want to get? Why?



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What are the advantages and disadvantages of purchasing an established hive from a beekeeper?

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# Bee Diseases and Pests

Like people, honey bees can be affected by diseases and pests. Although the types and number of bee diseases are limited, they can be very serious. Table 1, Honey Bee Diseases, Pests, and Medications, lists some of the most common ones. If you have access to the Internet, go to the Purdue University Bee Hive site and read “Parasitic Mites of Honey Bees.” You can also find current information on pests of bees in journals, at beekeeper meetings, and at other sites on the Internet.

Always be aware that your bees could become infected by disease, but the chances are in your favor that they will stay healthy. Nosema disease is more common in Midwestern beehives than most beekeepers realize, but seldom is so serious that the hive is noticeably weakened. However, it can become a serious problem during the winter. American Foulbrood can pose a serious threat to bee hives, but the other brood diseases (European foulbrood, chalkbrood, and sacbrood) are “stress” diseases that usually can be cleared up by re-queening or just feeding sugar syrup. Bee pests include the wax moth, mites, ants, and mice. The Varroa mite is currently the worst problem in beekeeping worldwide. Mice are very destructive during the winter. Reduce the entrance size to decrease damage by mice. Some beekeepers use a 1/4 inch square wire mesh during the fall and winter to prevent entry by mice.

## NOTE:

The information and suggestions in the publication are intended to provide guidelines for bee management. Table 1 is included to help you identify possible causes of problems. Control and treatment for some of the diseases and pest of bees may require the use of pesticides. If you think your bees have a disease or pest, ask your advisor for help in determining the cause and solution. It takes expertise and experience to learn about bee diseases and pests. Do not attempt to do this yourself, until you have worked with bees for many years. Use of some pesticides requires certification.

Because of changing laws and regulations, Purdue University Extension assumes no liability for these recommendations. The recommendations for using pesticides included in this guide are incomplete and should not serve as a substitute for pesticide labels. Complete instructions for the use of a specific pesticide are on the pesticide label. The pesticide user is responsible for applying pesticides according to label directions, as well as for problems that may arise through misapplication or misuse of the pesticide. Label changes, product cancellations, and changes in recommendations may have occurred since the publication of this guide. Check with your county Extension agent in agriculture if you are in doubt about a pesticide you plan to use. Trade names have been used in this guide for clarity, but do not constitute an endorsement by Purdue University, nor do they imply discrimination against other products.