

Seasonal Apiary Management for Missouri

This guide describes a management program for setting up and maintaining beehives to foster healthy bees and produce surplus honey for personal use or to sell. Suggested timelines are subject to changes in weather patterns and can fluctuate as much as 30 days.

For more beekeeping information — including general hive assembly instructions, disease and pest identification and control tips, and a beekeeping glossary — consult MU Extension publication G7600, *Beekeeping Tips for Beginners*.

First year — Establishing your hives

The four phases of apiary management during the first year are planning and construction, apiary setup, colony establishment, and winterizing. Honey production is not expected but is possible during the first year.

Planning and construction: November through February

- Take a beginning beekeeping class.
- Sign up for a trade magazine to stay informed on research and changes in management practices
- Join local, state and national beekeeping associations. Networking with people that have a similar passion for keeping bees is the best way to get practical information. Beekeepers often like to share their experiences, and it is comforting to know someone who can help when you have specific questions.
- Decide on a location for your apiary.
- Decide on a beginning number of hives. Two to five are recommended for a beginning beekeeper. Each hive would consist of two brood boxes and two supers.
- Decide on the race of bees for the first year. Italian bees are recommended because they are easy to obtain and are the industry standard.
- Decide whether you want to begin with an entire operating hive, a nuc (nucleus colony) or a 3-pound package of bees with a queen included.
- Before the end of January, order your bees, noting the expected delivery date. Mid- to late April is the earliest recommended date for package bees. Early June is common for nuc and complete hive deliveries.

Bee inspection and diagnosis

Missouri Apiculture Law (Chapter 264, Missouri Revised Statutes) provides for inspection of honeybees upon request. Out-of-state beekeepers are required to have inspections done before bringing honeybees or equipment into Missouri. Contact the Missouri Department of Agriculture, Plant Industries Division, Plant Pest Control Program at 573-751-5505.

Samples of bees for diagnosis can be sent to the U.S. Department of Agriculture (USDA) Bee Research Laboratory in Maryland. Submission instructions can be found online at <http://www.ars.usda.gov/Main/docs.htm?docid=7472>.

- Decide if you want preassembled or unassembled hives, or “woodenware.”
- Before the end of January, order your woodenware and foundations.
- Before the end of January, order your safety equipment; at a minimum, a smoker, gloves and a veil are recommended.
- Before the end of February, assemble and paint the outsides of the hive boxes with exterior latex paint.
- Before the end of February, assemble all frames.
- Before the end of February, order or secure four 5-gallon food-grade buckets with lids. Many bakeries have frosting buckets they will sell, or you can order new buckets when you order your equipment. Do not use pickle buckets because the vinegar permeates the plastic and will infiltrate both sugar water and honey.
- For emergency feeding, buy 50 pounds of sugar for each hive being established.
- Buy or make pollen patties.

Apiary setup: March and April

- Thirty days before bee delivery, set up the bee hives in the apiary.
- Two days before bee delivery, make sugar water. A ratio of 1 unit of sugar to 1 unit of water, by weight, is recommended. A 5-gallon bucket will hold about 3 gallons of water and 25 pounds of sugar.
- If you have ordered package bees or nucs, attend a hands-on introductory beekeeping class with a local bee club and ask questions.
- The best time to install bees is shortly before sunset, so pick up your bee delivery as late in the day as possible.

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- Ensure that each hive contains at least 1 quart of sugar water and one pollen patty for food. It takes eight times the energy to produce wax as it does to forage for honey. The bees will need lots of food during the first 30 days of colony establishment.
- Install the bees into the hives.
- If installing package bees, insert the queen cage and allow at least three days for the workers to release the queen. After three days, check to make sure the queen was released. If not, release her yourself.
- Inspect the sugar water source daily to ensure enough is available, especially if very few plants are blooming (Table 1). As a food source, bees prefer honey first, nectar second and sugar water as a last option. A package of bees can consume a quart of sugar water a day, depending on the time of year.

Colony establishment: May through August

- Continue to provide sugar water until nectar flow in your area is strong. Evidence of nectar flow will be indicated by the amount of sugar water being eaten by the hive; a good nectar flow will cause the bees to slow or stop the sugar water feeding.
- Watch for signs of swarming, such as large queen cells along the bottoms of the frames in the brood nest. These cells signify overcrowding in the colony. Be prepared to add a second brood box when the first one is 70 percent full.
- Be prepared to add a honey super box when the second brood box is 70 percent full. If you add a honey super, stop feeding sugar water.
- Maintain the area surrounding your apiary. Use an electric weed trimmer or a nonpowered push mower to keep grass and weeds under control and increase the air circulation around the hive without disturbing the hive.
- Make sure your bees have enough water available, especially when the weather begins to get hot.
- Make sure your hives are ventilated during the hottest part of the summer.
- Every other week, do a quick hive inspection to check for signs of a laying queen and adequate food.
- Check for hive beetles, and take action to control them if their presence is indicated.
- At the end of July or beginning of August, monitor for varroa mites. During the hotter time of the year, their populations can get out of control. Treatment for mites is indicated when more than 5 percent of the bee population is affected.
- At the end of July, if sufficient nectar sources are available and your brood has established quickly, you might start to see honey supers that are completely capped. This is rare during the first year but does happen.
- Once a super is 95 percent capped, it can be safely removed and the honey extracted. The honey must be extracted from the super within 24 hours of removal from the hive, especially if hive beetles are present.

- If you see hive beetles in the hive, remove capped honey frames and freeze them until you have collected enough frames to make extracting feasible. Freezing will kill the hive beetles and keep them from “sliming” the honey.
- Watch for wax moths. They are secondary predators and are not a threat to a strong hive, but weak hives may need to be treated.

Winterizing: September and October

- Decide how to provide emergency food during the winter months.
- Begin feeding sugar water with a ratio of 1 unit of water to 2 units of sugar, by weight.
- Ensure each hive has 40 to 60 pounds of honey or feed for winter consumption.
- Add hardware cloth to the entrance of each hive to prevent mice and skunks from entering during the winter.
- Protect hives from winter winds and snow by creating a windbreak or snow screen, especially on the north side of the hives.
- Do a final hive inspection to make sure the hive is queen-right and strong. Fewer than five frames of bees indicates a weak hive that may not survive the winter.
- Combine a weak hive with a strong hive, but never combine two weak hives as neither will survive.
- Do not go into a hive if the outside air temperature is below 45 degrees F.
- After October, only enter a hive when it is necessary to check on food reserves and only if the outside air temperature is at least 45 degrees F.

Second year — Managing for honey production

The four phases of apiary management during the second year are education, planning and construction; spring brood build-up; honey production and disease and pest monitoring; and winterizing.

Several factors affect honey production, but annual average honey harvests can range from 40 to 80 pounds per hive. Some hives located in nectar-rich environments, such as urban areas, have reported harvests of as much as 200 pounds per hive during a good year.

Education, planning and construction: November through February

- Take an advanced beekeeping class
- Continue furthering your education by reading books and magazines on bees and beekeeping.
- Keep hive entrances free of snow and ice.
- Bees will consume about 25 pounds of stored honey during January and February. During warmer days, when the temperature is above 45 degrees F, quickly check on food reserves in the hive. Do not disturb the

brood nest or enter a hive if the temperature is below 45 degrees F.

- Never feed liquid food during freezing temperatures because doing so could cause an “icebox” effect on the hive. Loose sugar or fondant is recommended for emergency feeding during this time of year.
- Continue networking with local, state and national beekeeping associations to develop relationships with other beekeepers, and be willing to consider their opinions and suggestions.
- Before the end of January, order additional materials and bees for the coming season.
- Before the end of February, assemble and paint the outsides of the hive boxes with exterior latex paint.
- Before the end of February, assemble frames.
- Before the end of February, order or secure an additional four 5-gallon food-grade buckets with lids. Many bakeries have frosting buckets they will sell, or you can order new buckets when you order your equipment. Do not use pickle buckets because the vinegar permeates the plastic and will infiltrate both sugar water and honey.
- For emergency feeding, buy 50 pounds of sugar for each hive being established.
- Buy or make pollen patties.

Spring brood build-up: March and April

- Make sugar water. A ratio of 1 unit of sugar to 1 unit of water, by weight, is recommended. A 5-gallon bucket will hold about 3 gallons of water and 25 pounds of sugar.
- March is when most hives will starve to death because of the heavy feeding patterns during the previous two months. Make sure food is available for the bees during this time.
- If adding new bees, follow the bee installation instructions in the first year “apiary setup” section.
- In late March or early April, inspect the hives. Check for a laying queen, evidence of drone cells, and food reserves.
- Check for signs of nosema disease, varroa mites, hive beetles or mouse damage. Treat or repair as needed.
- In late April, but before a good nectar flow, reverse brood boxes, putting the box with the cluster of bees on the bottom and the empty brood box on top.

Honey production and disease and pest monitoring: May through August

- Finish sugar water feeding and any necessary disease or parasite treatments before nectar flow in your area is strong.
- Watch for signs of swarming, such as large queen cells along the bottoms of the frames in the brood nest. These cells signify overcrowding in the colony. Be prepared to add a second brood box when the first one is 70 percent full.

- Be prepared to add a honey super box when the second brood box is 70 percent full. If you add a honey super, stop feeding sugar water.
- Maintain the area surrounding your apiary. Use an electric weed trimmer or a nonpowered push mower to keep grass and weeds under control and increase the air circulation around the hive without disturbing the hive.
- If desired, make splits in June to expand your apiary.
- Make sure your bees have enough water available, especially when the weather begins to get hot.
- Make sure your hives are ventilated during the hottest part of the summer.
- Every other week, do a quick hive inspection to check for signs of a laying queen and adequate food.
- Check for hive beetles, and take action to control them if their presence is indicated.
- At the end of July or beginning of August, monitor for varroa mites. During the hotter time of the year, their populations can get out of control. Treatment for mites is indicated when more than 5 percent of the bee population is affected.
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- If you see hive beetles in the hive, remove capped honey frames and freeze them until you have collected enough frames to make extracting feasible. Freezing will kill the hive beetles and keep them from “sliming” the honey.
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Winterizing: September and October

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- Begin feeding sugar water with a ratio of 1 unit of water to 2 units of sugar, by weight.
- Ensure each hive has 40 to 60 pounds of honey or feed for winter consumption.
- Add hardware cloth to the entrance of each hive to prevent mice and skunks from entering during the winter.
- Protect hives from winter winds and snow by creating a windbreak or snow screen, especially on the north side of the hives.
- Do final hive inspection to make sure the hive is queen-right and strong. Fewer than five frames of bees indicates a weak hive that may not survive the winter.
- Combine a weak hive with a strong hive, but never combine two weak hives as neither will survive.

Table 1. Flowering periods for Missouri honey plants.

Honey plant	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.
Alfalfa									
Aster									
Basswood									
Birdsfoot trefoil									
Brambles									
Brassicas									
Buckthorn									
Clover									
Cotton									
Cucurbits									
Dandelion									
Elm									
Fruit trees									
Goldenrod									
Hawthorn									
Honeysuckle									
Locust									
Maple									
Milkweed									
Persimmon									
Poplar									
Privet									
Redbud									
Soybean									
Sumac									
Sunflower									
Tulip poplar									
Vetch									
Willow									

- Do not go into a hive if the outside air temperature is below 45 degrees F.
- After October, only enter a hive when it is necessary to check on food reserves and only if the outside air temperature is over 45 degrees F.
- Never feed liquid food during freezing temperatures because doing so could cause an “icebox” effect on the hive. Loose sugar or fondant is recommended for emergency feeding during this time of year.

Third year and beyond — Managing for honey production

The main difference between year two and the following years is that complete replacement of frames and foundations is recommended every three to five years. Destroy any damaged foundations and frames during spring and prewinter hive inspections.

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ALSO FROM MU EXTENSION PUBLICATIONS

G7600 *Beekeeping Tips for Beginners*

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