

The Kentucky Beekeeper's Calendar

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The honey bee hive is as closely tuned to the seasons and the weather as any living plant or animal. An early spring, a dry summer, or a long winter greatly affects the life of the bee hive. For these reasons, the good beekeeper is always scrutinizing the calendar, speculating about rainfall, awaiting the arrival of warm weather, or preparing for winter. This is a guide for beginning beekeepers who are learning to think about the seasonal cycle.

The times given for beekeeping activities will vary, according to weather and location. This calendar is for a year with average weather in central Kentucky. A mild winter and early

spring will accelerate bee colony development by several weeks or even a month. If the winter drags on into a cold, rainy spring the bees will lag behind in their development and activities. It's interesting that the times of year that the plants bloom are not affected as much by weather. They may vary by a week but not much more.

Southern and far western Kentucky generally get spring weather a week or two earlier than central Kentucky. The eastern mountains and the northern part of Kentucky are later in getting spring weather. Similarly, fall comes late to the southern and western parts of the state, and early to the east and north. □



January and February

What's Happening Inside The Hive?

The bees keep their winter cluster intact, except on the occasional sunny days in the 50's and above when the bees can fly. The queen begins to lay eggs, and brood rearing begins in the largest, healthiest hives.

Kentucky often gets a sharp cold spell in January. Cold weather will not hurt the bees if they are ready for it — with a good cluster size, plenty of stored honey, and the mites and nosema disease under control. This is not too surprising, since hives are well adapted to overwinter successfully in northern Canada. At KSU we have measured bee hive cluster temperatures above 80° or 90° on snowy January days.

Beekeeper Chores

This is the time for constructing, painting, and repairing equipment. Most of the new catalogs from the beekeeping supply companies will be available in January. Your goal should be to have the bees and the equipment ready for making honey by mid-April. Old, dark comb should be removed from frames in storage. Do not install the foundation yet — that should be done just before the frames go into the hives. Foundation will dry, crack, and be rejected by the bees if it is exposed to the air for a long time prior to going into the hive.

If you are buying queens or package bees this year, order by January. By February or

March, many of the producers will be booked solid and not able to promise your shipment of bees before May. The availability of queens and packages depends partly on winter weather in the southern states where they are produced. A relatively cold winter will delay their production of bees.

There will be a few days in these months above 60°. If possible, take a few minutes to look at your hives. If no bees are flying from a hive, you probably have lost it or it's very weak and could die soon. Open it and take a look.

When examining a hive in late winter, you will be concerned with several things. Are there signs of serious tracheal mite infestation? It's normal for a few dead bees to be carried out of the hive on warm winter days. But if many bees are crawling and clustered on the ground in front of the hive, suspect tracheal mites. They will be unable to fly and a few may have "K-wing" (wings sticking out at an odd angle). Often problems can be diagnosed at KSU or the Kentucky Department of Agriculture from a sample of worker bees taken from a weak hive. (See the KSU publications "The Tracheal Mite: a microscopic parasite of honey bees" and "Preparing and mailing honey bee samples for mite and disease diagnosis.")

Does a cluster of bees nearly as large as last fall remain? How many honey frames are left? The bees should still have several frames with honey they stored last year. You may add honey frames from other hives that have more honey, if necessary. But do not break the cluster of bees by placing frames of honey inside of it. The bees will need to maintain their cluster through the remaining cold weather of late winter and early spring.

Middle or late February is a good time to install Apistan or Checkmite strips for varroa mite control. By getting the strips in early, it's possible to leave them in for a full eight weeks (Apistan) or six weeks (Checkmite) and then remove them well before the honey flow begins in late April. Mark your calendar so that you remember when the strips should be removed.

Observations and Ideas

Take a look at the maple trees through the month of February. The maple flowers are a drab, dark red and bees collect yellow pollen from them. This is an indication of the first availability of food for the bees, and that the end of winter is coming.



March

What's Happening Inside The Hive?

March is a critical time for the bees. The bees will thrive or suffer depending on weather and your management. Tracheal mites, starvation, and nosema disease are the main enemies at this time.

The bees are starting to rear more brood, but it's an erratic process. Dandelions and henbit appear as significant pollen and nectar sources. For a few warm days the bees bring in the pollen and feed larvae. The queen increases her egg laying. Then a cold spell hits, and the cluster contracts. Often some of the brood is left outside of the cluster and starves. The bees destroy this dead brood. Brood in the center of the cluster matures, and young worker bees emerge to join the colony. Then the weather warms up again, the queen resumes her egg laying, and this cycle continues. Gradually, young worker bees replace all of the old "winter" bees that were reared last year.

The bees have consumed a lot of honey through the winter but have not had a chance to make new honey, so stores are low. Brood rearing requires the bees to consume honey rapidly for two reasons: First, the hungry larvae demand a lot of food. Second, the brood cluster temperature must be raised to above 90°. To reach that higher temperature, the worker bees eat honey and generate more heat by "shivering" with their flight muscles. This is why starvation in March is a real danger. If you find a ball of dead bees in the comb, each with its head in a cell, that's a sure sign of starvation.

The long period of confinement can take its toll in the buildup of tracheal mites and nosema disease. Both tend to increase through the winter because the bees are confined and unable to fly frequently.

Beekeeper Chores

Vegetable shortening patties and menthol should go into the hive as treatments for tracheal mites. The shortening is particularly helpful because it works better than menthol in cool weather. If you use Apicure (formic acid) gel packs for varroa control, this is a good time to put them in the hives. Apistan or Checkmite strips should be installed if they were not installed in February.

If the bees are low on honey, feed with sugar syrup. This will boost brood rearing. The best time is when the weather is predicted to be warm (highs of 60° or above) for several days. The bees will not break their cluster to take the syrup during cold weather. Include Fumadil B mixed into the syrup, to control nosema disease. Nosema disease hurts the bees' ability to rear brood. A good start on brood rearing in spring time is essential for honey production or crop pollination later on.

Remove the entrance reducer, a wooden strip that restricts the entrance of the hive. The bees will soon need more room to come and go.

Be sure you have your empty frames, supers, and new foundation ready. Beekeeping supply companies experience a rush of orders from last-minute beekeepers in April. If it happens to be a good year for honey you don't want to miss it because you didn't order equipment in time.

Observations and ideas

This may be the time to look for new apiary sites, especially if you plan to add to your number of hives. The need for windbreak will be most apparent in winter and spring. The hives should also have direct sunlight from the south and east. Easy access by car or truck is also a plus, if you

plan on hauling a good honey crop. Later in the spring, look for bee forage in the vicinity. Pasture, tobacco fields, and most cultivated farm land is "desert" as far as the bees are concerned. If the hives are not close to or visible from the

nearest road you will have fewer worries about vandalism. Avoid apiary sites that may be bothered by livestock. A large animal can easily knock over a hive.



April

What's Happening Inside The Hive?

By April, the bees have made it over the hump. The problems they faced in March have not completely disappeared, but a healthy hive needs only a little nurturing now. Brood rearing should really increase through this month. If it does not, your hive has serious problems. As the warmer weather comes, look for many bees returning with pollen loads. The stronger hives will have a significant amount of drone brood in preparation for the mating season.

Beekeeper Chores

In particular, keep an eye on the 5-day weather forecasts. A week of cold rain could really hurt the brood rearing. Feed the bees if you see this coming and the hive does not have at least a frame or two of stored honey. Add a second deep hive body when the brood, pollen and honey have nearly filled the first body. This extra space will help reduce swarming. The loss of productive bees in a swarm is your main threat in late spring:

Remove the tracheal mite treatments. Problems with tracheal mites can continue even if you did put the treatments on in March. But as long as the hive is rearing brood, healthy bees will be replacing those with tracheal mites. Remove the varroa mite treatments according to when they were installed in February or March.

Treat your hive with terramycin to prevent American foulbrood (AFB) disease. This is especially important if you have had problems with AFB in recent years or have purchased used equipment. Be sure this treatment is completed before you put honey supers on your hives.

This is a good month to requeen your hive, if the queen you have now is weak or is at least two years old. If your queen is only a year old, watch the brood pattern develop through the spring months. If the amount of brood is considerably less than it was last year at this time, think about possible causes: mites, nosema or bad weather. If you can rule out these causes, look closely at the queen. Is she long and fat, or about as small as the worker bees? A good queen will be considerably longer than a worker bee once she has started to lay eggs. Does she move all of her legs normally as she walks across the comb? An injured queen must be replaced. If she is shiny, small and "bald" she has been attacked by the workers who have chewed the hair from her. Such a queen must be replaced as soon as possible.

Observations and Ideas

If you are pollinating strawberries, pears, cherries or apples in April, a strong hive is much better than a weak one. Remember that bees collect pollen for brood rearing. A hive with four or five frames of uncapped brood will need

(and collect) much more pollen than a weak hive with only one frame of brood. The pollen foragers are the ones that are best at transferring

the pollen from one blossom to another — the essence of pollination.



May

What's Happening Inside The Hive?

In May and June you and the bees are rewarded, or disappointed, by how well you prepared for the honey flow. You may also be busy keeping up with your bees. Serious beekeepers do not take long vacations in May.

If your bees are healthy, everything happens this month. The hive is full of young bees, the weather is almost perfect, and honey plants are blooming everywhere. The queen is laying eggs day and night, often over 1000 daily. There are now enough bees to take care of all the brood. The hive is making honey very quickly, even several pounds daily. If the bees need to make wax they will do this quickly by building onto foundation in your frames or by filling in empty spaces with burr comb. Drone production increases greatly and many drones fly out on sunny afternoons in search of the mating areas.

Swarming becomes a very important factor. May is the ideal time for a colony to reproduce, and most colonies will produce "swarm cells", or queen cells that will mature in time for swarms to issue from the hive. There are three reasons to keep your bees from swarming : (1) Your hive will be weakened and the potential for honey production much less; (2) Your queen will be replaced by a daughter queen which may not be as good as the original; and (3) Your swarming bees can be a nuisance to the neighbors.

The possibility of tracheal mite and nosema problems is very low by now. Only the very weakest hives are still fighting them. Varroa

mites should be at very low levels, but be aware that they are starting to increase now that the treatments are out of the hive.

Beekeeper Chores

Check your hives weekly and add supers as needed. Be sure there is plenty of space above the brood nest for honey. Frames with new foundation should go in. A strong hive will draw out the foundation into new comb in just a few days if the weather is good.

In a hive with two deep brood boxes, the bees will often move to the upper brood box, leaving the lower box relatively empty. This is an inefficient use of space in the hive and can lead to swarming. In May or June it is useful to "reverse" these brood boxes. This means removing all of the boxes, placing the second box on the bottom board where the first box had been, and placing the first box above it. This may break the brood cluster. So check the weather forecast and do this when at least two warm days are coming. The bees will need to rearrange their cluster, and less brood will be lost in the process if it is not exposed to cool weather much below 50°.

Observations and Ideas

Hold a honey frame horizontally and shake it over the hive. If nectar sprinkles out, your bees are on a honey flow. The nectar is still dilute and watery. With time, the bees will either consume it or continue to thicken and ripen it into honey.

Swarm collecting has been a favorite pastime of beekeepers for centuries. If you are interested in doing this, have a few empty hives on hand. Some beekeepers locate empty "trap hives" or "bait hives" near their own hives. Often, a

swarm flying out of one of your own hives will move into the trap hive, since it is much like what the bees are searching for. In this way, the beekeeper manages to catch and save the bees, although the source hive is weakened.



June

What's Happening Inside The Hive?

This month is much like May, except the hive will have more bees. The honey and pollen flows continue. The days are long enough that the bees can fly for 14 to 16 hours a day, and they will.

There is now plenty of drone brood, which is ideal for varroa reproduction. It's too early to treat for varroa, but it's good to look for these mites by uncapping and examining the capped drone brood cells. (See the KSU publication "The Varroa Mite: an external parasite of honey bees".)

Beekeeper Chores

Inspect the hive weekly if possible. Provide extra honey supers as needed. Watch for queen cells and destroy all that you find. The brood should now fill many of the frames of two hive

bodies. An overcrowded brood nest can stimulate swarming. To provide space you can spread the brood frames apart, and insert one or two empty frames. It's warm enough now that there is no danger of chilling the brood. The queen is looking for empty cells all the time, and she will quickly fill these frames with eggs.

If you are going to increase the number of hives you have by making divides, May or June is the time to do it.

Observations and Ideas

Walk the roadsides and fields, looking for flowering plants with honey bees on them. If the bees are collecting pollen, note the color. Taste, smell and observe the color of the honey which the bees have just placed in the supers. Over the years you will learn the seasonal cycle of bee plants.



July

What's Happening Inside The Hive?

The bees are much less active. The honey flow often ends, and the beekeeper will notice that stings are more frequent! This is because the foragers have less to do, and consequently

spend more time at home guarding the hive. Swarming is still possible, but much less likely.

Bees are now searching for water to cool their hive, and will fly for miles to find it if necessary. They place small drops of water in

the cells and use their wings to fan the air over the cells.

Beekeeper Chores

Many beekeepers harvest the honey in July. Take the frames in which the honey cells are capped. If the weather has been rainy, the bees may not have been able to remove enough moisture to ripen it yet. In this case, many of the honey cells may still be uncapped. Leave the honey frames on the hives through a hot, dry period, and check again.

Water availability can be a concern. If water (a stream, pond, or other clean water) is not within a half mile, provide a source. This can be a slowly dripping faucet or large container of water with pieces of wood floating in it.

Look for varroa, especially in your strongest hives. Hives with the most bees have the most drone brood, the favorite spot for these mites. Uncap at least a dozen capped drone cells, remove the pupae, and examine them carefully. If you have varroa in these cells, remove the honey harvest as soon as possible and treat with Apistan or Checkmite. If you do not find varroa, repeat this examination in the following weeks.

Sticky boards placed on the bottom boards are more accurate indicators than drone brood checks. If over 15 mites per day are falling to the sticky boards, they are reaching dangerous levels.

Hives can be successfully requeened in July and August. However, it is harder to find the old queen in a hive packed with bees in mid-summer, compared with the much smaller hive population in April. It is a good idea to feed the bees to encourage acceptance of the new queen, if requeening is done when the bees are not on a honey flow.

Observations and Ideas

Scout the area near the hives to see where your bees are finding water. They may be a nuisance to neighbors if your bees have fallen into swimming pools.

Some beekeepers plant crops in the spring to supplement their honey production in July and August. Buckwheat, vitex and sunflower are plants that can provide nectar in mid-summer. At KSU we have found that buckwheat is a relatively drought-resistant nectar source.



August

What's Happening Inside the Hive?

This month is much like July. The bees are still rearing brood, but storing little honey. And they still need water.

Late summer is the time for bees to try to rob honey from other hives. This is because of the dearth of nectar. If you have more than one hive, don't open a hive for more than a few minutes. Unguarded honey leads to a "robbing frenzy". Even if you then close the hive, the

robbing bees remain in the same frame of mind. Stronger hives will do their best to fight their way into the weaker hives. Watch for fighting bees at the entrances of the hives.

August is a serious month for varroa mites. The mites have been reproducing rapidly in the brood cells since spring. Their numbers can build up without any apparent signs of trouble and then suddenly destroy a hive within a few weeks.

Beekeeper Chores

If you haven't looked for varroa this summer, do so now (as described for July).

August is the month to begin thinking about winter. A weak hive should be de-queened and united with a stronger hive.

Observations and Ideas

Kentucky beekeepers work together at the honey booth at the state fair each August in Louisville. The fair is a good opportunity to sell

your honey and to meet with other beekeepers. This activity is planned by the Kentucky State Beekeeping Association.

By this time of year, you and your beekeeping friends nearby know whether you have had a good year. Compare notes on honey production, queens, mite problems and other concerns. Note the sources of the best queens purchased by other beekeepers. Word of mouth is often the best way to find good queen and package bee producers.



September

What's Happening Inside the Hive?

Brood rearing begins to taper off and drone brood has disappeared. Often, a second honey flow comes in September. Goldenrod and aster bloom at this time. With a good location and good weather conditions, the beekeeper can make a significant crop. Have an empty super on the hive to take advantage of this possibility. Your experience from previous years will tell you whether bees can make a late season crop in your area.

Beekeeper Chores

Put those mite treatments on! Hot September weather may keep you from putting the Apicure gel packs (for varroa) or menthol (for tracheal mites) on. Wait until daytime temperatures are regularly below 85°.

Beekeepers often face a September dilemma. If they put their Apistan on in early September, they will not be able to harvest the honey made in that time. If they wait until late September, the varroa mites may be out of control and the

hive lost. The best approach is to monitor your varroa numbers through late summer. That information will allow you to make an informed decision.

The last weeks of warm weather are the time to assess which hives are ready for winter. There is still time to feed syrup to those without sufficient stored honey and to unite the weakest hives with stronger hives.

Observations and Ideas

Late summer and early fall is yellow jacket season. These wasps are often confused with honey bees by non-beekeepers. If your neighbors have yellow jackets disrupting their picnics, they may blame you. Show them the differences: yellow jackets have less hair than the fuzzy bees, are slightly smaller, live underground, and are interested in many foods like meat that bees don't care for. Yellow jacket nests die when winter comes. Only the queens survive, hibernate through the winter, and start new nests alone in spring.

October

What's Happening Inside the Hive?

Brood rearing declines dramatically to a small cluster of cells. Drones remaining in the hive are ejected by the workers. The bees begin to winterize their hive by collecting propolis, a sticky substance made from plant resins. The hive is now harder to open, and many frames are glued into position with propolis.

Beekeeper Chores

Queen excluders should be removed by October, since they no longer serve any purpose. Late October or early November is the time to remove the mite treatments. The bees may take a little syrup in early October, but it is usually too late to feed the bees if they have not stored enough honey to make it through the winter.

Take a last look at the bees and make a note as to the size of the cluster and the amount of stored honey. This information will be useful in spring, when you may wonder about problems the bees had in making it through the winter.

Some animals — mainly skunks — are looking for food in preparation for winter.

Prevent skunks from scratching at the front of the hive by stapling a barrier of chicken wire or hardware cloth around the front of the hive.

In eastern Kentucky, bears are becoming prevalent. Like skunks, they will eat the bees to fatten up for winter, but in a much more destructive manner. One bear can demolish the hives and consume most of the brood comb. If bears have been a problem in your area, prevent them from attacking your hives with an electric fence. If bears are persistent, either the bees or the bears must be moved. Contact your local office of the Department of Fish and Wildlife about bear problems.

Observations and Ideas

You may note that some hives have procolized more than others. This is largely a genetic trait. If you feel this is an annoyance, try queens from a different queen producer.

After the first hard frost, watch the eviction of drones. It's often a real struggle between the workers and the drones.



November and December

What's Happening Inside the Hive?

The bees have changed to their wintertime mode. A large colony may have a small amount of brood in early November, but that will soon disappear. By now the queen has completely stopped laying eggs. Five or ten days in November will be warm enough for the bees to fly, but they will find nothing blooming.

As the weather gets cold, the bees form a tight cluster to keep warm. This ball of bees

overlaps several frames of honey. The bees gradually consume their stored honey and generate heat. The colder it gets, the tighter the bees cluster. Week by week, the ball of bees gradually moves through the hive to find more honey. When the first snowfall covers the hives, consider that the honey bee is the only insect in Kentucky that keeps warm all winter.

In early winter, mice may move into a hive and make a nest. This can occur even if the hive

is alive and well overwinter. The bees are tightly clustered and the mouse finds a spot in the corner away from the bees.

Beekeeper Chores

The year is effectively over. There is now little to be done for the bees. They will not feed on syrup and it is too late to apply treatments for mites and diseases.

If you haven't removed your mite treatments and queen excluder, do so on the first warm day in November. Otherwise, there is no reason to open your hives.

Attach an entrance reducer to the front of the hive. This serves two purposes: cold wind is kept out of the hive; and, mice are prevented from nesting in the hive. Entrance reducers may be purchased from beekeeping supply companies. Or, you can simply nail a strip of wood to reduce the opening of the hive. Be sure your entrance reducer is thick enough to be

mouse-proof. Some have metal strips to deter mice.

Observations and ideas

Late November and December are the best times to plant trees. Black locust and tulip poplar seedlings can be planted where they will provide shade, windbreak, and nectar for the bees. These two trees are known for their rapid growth and copious nectar. As honey plants, trees are a long-term investment. They will not provide significant bloom for several years.

This is a good time to do some reading. Some fine books and videos are available from beekeeping supply companies. Books on beginning beekeeping, advanced topics such as queen rearing, and general interest are sold.

Beeswax candles are fun and easy to make. They can be rolled from sheets of foundation in minutes. Beeswax foundation comes in dozens of colors, available from beekeeping supply companies.

References to any commercial product or service is made with the understanding that no discrimination is intended and no endorsement by the U. S. Department of Agriculture is implied.

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