



Animal &
Plant Health
Agency

National Bee Unit

Best practice guideline No. 7a:

April 2025

Feeding sugar to bees

This note provides guidance on feeding sugar to honey bees. In managed honey bees, when there is a lack of nectar or honey is removed as a crop, it is often necessary to replace the honey or supplement what remains to ensure the bees' survival.

When to feed

How and when to provide supplementary feed to honey bees depends on the time of year and the condition of the colony. A colony may need to be fed in late summer or autumn after the last honey crop has been removed, in spring if winter stores are running low, or in an emergency, for example when bees cannot forage during the active season because of a period of poor weather.

Autumn feeding

- Colonies will need feeding after the honey crop has been removed if too little honey has been left for the bees to overwinter on. When taking a honey crop, ensure that the bees have sufficient stores left in the hive to prevent starvation.
- It is preferable to leave sufficient honey, but supplementary sugar syrup can be used to make up the difference when too little honey is left to sustain the colony over winter.
- The weight of stores required by a colony to feed it through the winter is 18 to 22 kg (39.6 to 48.4 lbs). Larger colonies headed by prolific queens may require more. A British Standard brood frame full of honey contains about 2.3 kg (5 lb) while a super

frame holds approximately 1.2 kg (2.6 lb) of honey. A full super contains at least 12 kg of honey. Assess the existing colony stores either by hefting the boxes or counting the frames of stores and feed the required balance back using sugar syrup.

- Sugar syrup can be fed to supplement honey stores in early autumn to ensure the colony has sufficient stores to survive winter. The weather needs to be warm enough for bees to move up into the feeder and take syrup down and evaporate water to store it in the brood frames close to the overwintering bee cluster. When it becomes cold outside, the bees are unlikely to take the feed down into the frames. September is a good month to do this in many parts of the UK, but later feeding may be possible in some areas depending on the weather.
- Earlier feeding tends to be converted into brood so do not feed too early in the autumn unless you want more brood, you would like the bees to draw out foundation, or there is a risk of starvation.
- Supplementary feeding while varroacides are present in the colony may not be advisable depending on the treatment used. Check the product label instructions before applying varroacides during feeding.

Spring or stimulative feeding

- Stimulative thin syrup feeding in spring can be carried out to get brood foundation drawn out in a second box. This is well worth doing once willow is flowering to provide pollen and means that a change of brood combs is possible early in the year.
- To rear brood, bees need a mixture of honey/sugar, water, and pollen. To encourage brood rearing:
 - Ensure that the colonies are close to early pollen or feed supplementary pollen patties if necessary.
 - Ensure that the colonies have sufficient honey and/or sugar syrup stores. If not feed a thin syrup.
 - Ensure that the bees have access to a clean water supply. If necessary, provide a water feeder.

Emergency feeding

- Bees can starve at any time of the year. Colonies should be checked regularly for stores, even in winter. Hefting the hive should help inform when they are running low but it is also important to make sure that food stores are close to the cluster.
- Sometimes in winter, bees use up stores on one side of the hive and become marooned away from stores elsewhere. This is known as isolation starvation and hefting does not indicate that this has happened. You can check inside the hive on warmer days every 2 to 3 weeks during winter to check for isolation starvation. Frames of stores can be moved across so they are above the bee cluster or fondant can be placed above the bees.
- If bees are short of stores in the winter and likely to starve, then fondant can be placed over the crown board feed hole. In the case of small colonies, the crown board may need to be rotated around to position the feed hole over the bee cluster. Sugar syrup should not be fed to bees in cold weather as they cannot process it.

- Fondant can be placed above the top bars in particularly cold weather, as bees may be reluctant to move above the crown board. In this case, place an eke or upturned feeder for spacing but make sure to remove it when it is no longer needed as bees will fill it with brace comb when they build up in spring,
- To make use of fondant and honey stores, bees require water, often taken from condensation within the hive. Fondant is taken slowly and does not excite the colony as much as other feeds, this reduces the risk of robbing by other bees and wasps
- If sugar syrup is offered in a contact feeder, cold temperatures may cause the sugar to crystallise, blocking the mesh. If sugar syrup isn't taken in quickly by the bees, it can ferment and mould may form on the sides of the feeder.
- If bees are short of stores in spring, feed thin sugar syrup in a contact or frame feeder.
- In extreme cases when bees are starving, lightly spray them with a warm, thin sugar syrup solution and fill an empty comb with sugar syrup. This can be done by trickling the syrup into the comb cells slowly using a honey jar filled with sugar syrup and closed with a lid that has 3 mm holes, or using a squeezezy bottle, e.g. a cleansed washing up fluid bottle. When filled, place the comb adjacent to the bees.
- March and April are the months when the bees will be using up food reserves fast as the colony expands and produces more brood. It is better to have fed sufficiently or left honey in the autumn than to do emergency feeding in the spring. At this time a colony should have at least 4 to 5 combs of honey/stores, i.e. 9 kg or 20 lb.
- When removing a honey crop, always check that sufficient stores remain to prevent bees starving. Feed immediately if needed.



Figure 1: Fondant can be placed above crown board feed holes or directly on top bars (top). Ensure ekes/feeders used for spacing are removed in spring to prevent brace comb (bottom).

Types of feeders

There are three common types of feeder used to feed sugar syrup to honey bee colonies:



Rapid feeders

Rapid feeders consist of a deep tray which is placed over the crown board feeder holes. The bees have access from below via a covered passage arranged to stop them drowning. Versions such as Miller or Ashforth have the same external dimensions as the hive and are placed on top of the hive in lieu of the crown board. They can accommodate up to 10 litres (approx. two gallons) at a time.

Rapid feeders are ideal for feeding bees in the autumn but are less use in very cold conditions. When filling rapid feeders, a very small quantity of syrup is trickled down the side of the hole or slot to create a trail for bees to follow.



Contact feeders

Contact feeders are often plastic buckets of various sizes, with a gauze or small holes in the centre section of the lid. The bucket is filled with sugar syrup, or the syrup is mixed in the bucket and the lid is placed on the feeder to seal it up. The feeder is inverted over an empty container to catch the small amount of syrup that will pass through the gauze before a vacuum forms to hold it in place. It is then placed on the hive with the gauze patch over the crown board feeder hole. An empty super or eke is needed to support the hive roof.

Contact feeders are more accessible to bees in cool weather as the feed is close to the bees. This makes them more suitable for emergency or spring feeding.



Frame feeders

Frame feeders are containers that are similar dimensions to a brood frame and are hollow. They are made of plastic or wood and have a slot at the top to pour in syrup and from where the bees can access the feed. A float or hay/straw can be placed inside it to prevent bees drowning.

Frame feeders replace a deep frame and can be carefully placed into the brood box next to the cluster or brood nest. They are particularly useful for feeding nucleus colonies or in queen rearing systems.

Types of sugar feed

Fondant

- Fondant, sometimes called Baker's fondant or candy, is a stiff paste made of sucrose, glucose, and fructose. It can be purchased from most beekeeping equipment suppliers.
- Fondant is easy to feed to bees, the blocks are simply placed over the feed hole of the crown board or on the top bars with a cut in the wrapping to allow the bees to access it.
- Fondant is appropriate for use in winter, but can also be used to in package bees, queen mating mini nuclei and queen introduction cages.
- Fondant can be made at home to save money, using white granulated sugar and water; but beware not to overheat the mixture during preparation.



Figure 2: A block of fondant has been placed above the crown board. It has a cut in the wrapping to allow the bees to access it through the hole in the crown board

Sugar syrup

- Sugar syrup can be purchased ready-made, but it is cheaper to make it yourself. However, bought syrup is frequently already 'inverted' so can be used more easily by the bees. It also often has a higher percentage sugar than it is possible to incorporate at home and so can be stored without degradation or mould growth.
- To make sugar syrup use white granulated or caster sugar. It makes no difference if it is sourced from cane or beet but do not use brown or raw sugars as these will cause dysentery.
- A **thick sugar syrup** is made using 1 kg of white granulated sugar dissolved in 630 ml of water (or 2 lb sugar to 1 pint of water). The mixture should not be boiled, but hot or warm water will help dissolve the sugar. Stir regularly to remove the air bubbles and dissolve all the sugar crystals. When fully dissolved the mixture becomes clear and a very pale straw colour.
- A **thin sugar syrup** is made up using 1 kg of white granulated sugar dissolved in 1260 ml of warm water (or 2 lb sugar to 2 pints of water). A thin syrup is useful for emergency feeding as it can be immediately used by the colony.
- If syrup is stored for any length of time, then a black fungal growth may appear. This can be prevented by adding a little thymol. Thymol crystals do not dissolve readily in water but a solution in alcohol can be made up in a small (e.g. 100 ml) sealable bottle. Fill it to one third with thymol crystals and top the bottle up with surgical spirit. Add 2.5 ml of this solution to 4.5 litres of sugar syrup or half a teaspoon to a gallon of syrup.

Please note that thymol added to sugar syrup is not an authorised *Varroa* treatment. Thymol added to syrup for the purpose of treating/preventing

Varroa falls under the definition of a veterinary medicinal product and is prohibited by Veterinary Medicines Regulations without a prescription.

- Sugar syrup can be stored and moved around in suitable clean plastic drums. A plastic watering can is a useful device for filling feeders.

Robbing

- Feeding syrup excites bees and is usually done when there is no, or little, nectar flow. With this in mind, care should be taken to prevent the onset of robbing during feeding.
- Especially when feeding in autumn, supply the feed to all colonies in the late evening after the bees have finished flying. Reduce the hive entrance with an entrance block so that the bees have a smaller area to defend.
- Avoid spilling syrup or open feeding bees in the apiary as this will cause robbing.
- Watch for signs of robbing: bees fighting, erratic flight and bees trying to enter a hive without meeting the guards. Strong colonies invariably rob weaker ones. Wasps also rob colonies during the autumn feeding season.
- If robbing starts, reduce the entrance to one bee space using an entrance block and/or grass. This enables guard bees to protect the colony more efficiently. Placing a sheet of glass in front of the hive entrance so that bees have to go around the sides for access to the entrance can also help.
- Attack by wasps can be reduced by putting the floor board in underneath mesh floors to reduce the scent of the hive from being spread.
- The best cure to a robbing event is to move the besieged colony to another apiary if at all possible or even closing up the colony for 24 hours if it has enough space inside and won't overheat.
- If robbing starts during an inspection: close the colonies, reduce entrances, and leave the apiary.

Best practice recommendations for feeding bees

- Do not take off too much honey in autumn. If there is not enough stored honey, feed sugar syrup to make up the balance (to total about 20 kg).
- Use pure, white sugar for feeding. White granulated or caster sugar are the most suitable sugars to use. Do not use brown or other sugars as this causes dysentery.
- Never feed honey from unknown sources to bees, American foulbrood spores and EFB bacteria can be present in purchased honey. Avoid feeding honey from your own colonies unless there is no history of disease in your apiaries.
- Use the right type of feed and feeder at the right time for the task:
 - Rapid feeders are appropriate for autumn feeding, contact feeders are more suitable for spring or emergency feeding and frame feeders are most useful for use in nucleus colonies or encouraging comb building.
 - Fondant is used in winter or during very cold weather, thick sugar syrup is used for autumn feeding and thin sugar syrup is appropriate for spring feeding or emergency feeding of starving bees.
- Pollen and water may also need to be supplied.

Are you registered on BeeBase?



BeeBase is a FREE online service provided by the National Bee Unit to help protect you and your fellow beekeepers from pests and diseases that threaten the health of honey bee colonies.

If there is a disease outbreak in your area, the NBU team uses BeeBase to contact local beekeepers to arrange precautionary inspections to check for any signs of infection and to advise on what to do.

Register today at: www.nationalbeeunit.com

This leaflet was produced as part of the Healthy Bees Plan. The Healthy Bees Plan aims to address the challenges facing beekeepers in sustaining the health of honey bees and beekeeping in England and Wales. It has been jointly developed by governments, beekeepers, their associations and other stakeholders.

For more information on the Healthy Bees Plan, please visit:

www.nationalbeeunit.com/bee-health-improvement/the-healthy-bees-plan-2030/



© Crown copyright 2025

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v.3. To view this licence visit www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ or email PSI@nationalarchives.gsi.gov.uk

Data Protection:

For information on how we handle personal data visit www.gov.uk and search Animal and Plant Health Agency Personal Information Charter.

Any enquiries regarding this publication should be sent to us at:

National Bee Unit, APHA, York Biotech Campus, Sand Hutton, York. YO41 1LZ. Telephone: 0300 303 0094, email: nbuoffice@apha.gov.uk, NBU website: www.nationalbeeunit.com

www.gov.uk/apha

APHA is an Executive Agency of the Department for Environment, Food and Rural Affairs and also works on behalf of the Scottish Government, Welsh Government and Food Standards Agency to safeguard animal and plant health for the benefit of people, the environment and the economy