

“When making a decision of minor importance, I have always found it advantageous to consider all the pros and cons.”

– Sigmund Freud

There is a basic understanding with respect to winter preparation that the very best time to fatten up our colonies with stores for the winter is before winter. Now that October is here, we are in a race with the weather to get our hives topped up with the recommended 40 to 60 pounds of stored carbohydrates (honey or bee-processed sugar syrup, aka “funny honey”) that is hoped to be sufficient to sustain our bees until the first real nectar flow next spring.

This task has a frustrating element to it. In Piedmont North Carolina, we expect to have a small but important fall nectar flow, largely supplied by asters and goldenrod (see [“What’s that smell?”](#) for a celebration of those two types of flowers).¹ This does not give us a surplus (harvestable amount), but can easily provide all of the winter honey stores that our colonies need. However, at my place, the fall nectar flow is anything but reliable. Some years it delivers as promised, with no supplemental feeding required. Other years it fails to materialize, causing a frantic rush to put syrup on the hives in time for the bees to process it.

We don’t want to waste time and money feeding if it isn’t necessary, but how late should we wait to see if the fall flow is going to be adequate? In my bee yard, if my hives are light by late September, I begin supplemental feeding. I’ll know by mid-October whether the flow is likely to fill the remainder that is needed. Otherwise, I may get caught short.

Notice the use of the term “supplemental feeding”, which is quite different from

¹ Goldenrod has a bad reputation in the beekeeping literature, which is mostly written for and by Northern beekeepers. Goldenrod honey has a high ash content, meaning that it doesn’t get fully digested in a bee’s gut. If the weather is too cold for an extended period of time for a colony’s honey bees to fly outside the hive to defecate, they have no choice but to do so inside the hive. That isn’t a



This top feeder can sit directly over the handhold of an inner cover. Bees access the syrup by climbing up and over an open-top cone that is surrounded by an inverted cup. Once the syrup is consumed, the cup can be removed to allow the bees to clean up any leftover sugar in the pan.

“emergency feeding”. Timed properly, supplemental feeding means giving our bees sugar syrup in plenty of time for them to process it (adding enzymes and drying it to create “funny honey”) and store it before going into winter cluster. If left unprocessed, nectar or syrup can easily ferment while waiting to be consumed. Of course, cool fall and winter temperatures retard fermentation, but it will eventually occur nonetheless.

Note that it takes lots of healthy workers to process large quantities of syrup. If colonies are wimpy, combining them in fall with a strong colony is an excellent strategy (see [“Controlling Winter Losses”](#) for more).

Emergency feeding is different – it is needed either when our bees were not well prepared for winter or somehow circumstances radically change such that we must intervene to prevent starvation. The best emergency feeding options aren’t the same as the best

good thing. However, in our area, it is extremely rare for flight-preventing temperatures to persist for more than a few days or even a week straight. Our bees can poop every now and then; they don’t have to “hold it” all winter. Therefore goldenrod-induced diarrhea is not a cause for concern for us. Hooray for North Carolina weather!

supplemental feeding ones. But that isn't the topic of this article.

Taking all of this into consideration, what is the best feeder for fall syrup feeding? There is no single answer to that question, because it should properly be phrased, "What is the best feeder for you at your bee yard?" How should I know? All beekeeping is local and everyone's needs, circumstances, points-of-view, finances, goals etc. are different. Anything that holds syrup can be adapted to serve as a feeder, leaving us to ponder, "What features are important for us?"

We could simply set a bucket of syrup out in the bee yard. Positive points would be ease of refilling, equipment cost and simplicity. But robbing, drowning, disease-sharing, extreme waste and the higher cost of feeding all of the bees, ants and yellowjackets in the neighborhood would be negative issues. Let's do better.

A few fundamental principles

It bears emphasizing that we are talking about feeding carbohydrates (sugar). Hobby beekeepers in our area rarely have any need to feed supplemental protein (pollen or pollen substitute). Doing so may cause an unnaturally large increase in the wintertime bee population, adding greatly to the risk of starvation. Feeding protein to boost the population may perhaps be beneficial late in winter if huge colony populations are needed early and there is insufficient pollen available in the hive, but it is counterproductive in fall.

Of the common options (dry sugar, candy boards/fondant, sugar syrup), thick sugar syrup is ideal for fall feeding. It is pure sucrose, highly preferred by honey bees. It is in a form that enables the bees to process it just as they would nectar. With respect to storage, unlike candy boards or dry sugar, it can be perfectly arranged according to the bees' natural logistical strategy for overwintering success. Plus it is cheap and simple with little if any waste.

Why is thick syrup (two parts sugar to one part water) recommended for fall feeding? That

particular sugar-to-water ratio is at the upper limit of how much sugar can be dissolved into water without it precipitating back out of solution. So feeding thick syrup puts as much sugar as is physically possible, as quickly as is possible, into the hive. That's all there is to it. Feeding thinner syrup doesn't cause any problems for the bees; it simply will take them a bit longer and require more effort to evaporate it down to where it needs to be (less than 18.6% water to forestall fermentation).

Emergency feed such as candy boards can be placed directly over a starving cluster, but there is no need to do that with fall syrup. It is far better to give the bees the resources and time to put stores where they want it.

Feeder features to consider

Now that we are focused on feeding thick syrup, there are certain feeders which have beneficial features compared to others. All have pros and cons; the best ones are those whose positive aspects far outweigh their negative ones in our specific bee yard. Let's consider how different types stack up with respect to capacity, accessibility, convenience and safety.

Capacity: how many bees can feed at once?

The classic Boardman feeder can only feed as many bees as can force their way up to the pinholes on a jar lid. An old-style Miller feeder, with a floating platform that covers the entire expanse of a super, can feed many thousand bees all at the same time. More is better.

Capacity: how much syrup will it hold?

When the race to winter is fully underway, an empty feeder means syrup isn't available for processing and storage. A feeder that holds a lot of syrup is an advantage. That doesn't mean that it must always be filled to the brim – the beekeeper must judge how quickly it is being drained and refill as is appropriate. Providing way too much at one time can result in fermented syrup, an unnecessary waste. But providing an abundance without having to constantly refill is desirable.



This Miller feeder has been modified by removing the screen at the end and adding a floating platform. The capacity remains the same but bee drownings are greatly reduced, at least at my place.

Many commercially-available feeders hold a gallon of syrup. Some hold twice that much; some much less. At my place, I want to be able to feed at least a gallon at a time during the fall rush to put on weight.

Accessibility: where is the syrup vis-à-vis the bee cluster?

This question is critical for emergency winter feeding, less so for fall feeding in moderate temperatures. When bees are in winter cluster, they will not leave cluster to travel to food. So top feeders aren't effective when the weather is too cold for the bees to access them. As is mentioned above, in our area temperatures are rarely too cold for such access for continuous, extended periods, but an overnight cold snap could leave a colony separated from its food supply within the hive. This is one of the reasons that supplemental feeding is best done before winter sets in.

This question also has implications for entrance feeders such as Boardman feeders. Feeders at the entrance are at risk of being robbed because they are easily accessible to determined bees, whereas only the most fearsome bee would dare traverse the entire hive, passing through thousands of resident bees, to steal from a top feeder.

With respect to cluster access, the best-performing syrup feeder type is a division-board

feeder, aka a frame feeder. It can be placed directly adjacent to the cluster, no more difficult to access than an adjoining frame.

Convenience: how easy is it to refill?

Ease of refilling is important. So is how cumbersome it is to remove a feeder to access frames in the hive. A full Miller feeder is a bit of a hassle to remove for inspections but is very simple to refill. Division board feeders don't interfere with hive manipulations but are a little harder to access. Tip: a classic garden watering can with a long, curved spout makes pouring syrup into division board feeders a lot less messy.

How bee-safe is it?

Large reservoirs of syrup have many advantages but sometimes end up with lots of drowned bees in them. A few tweaks in the design can solve this problem.

Division board feeders can be fitted with a piece of zig-zagged screen inside to serve as a bee ladder, or a piece of wood such as an entrance reducer can serve as a floating feeding platform.

Miller feeders often are screened at one end so that they can be refilled without the bees flying up at the beekeeper. The screen also serves as a ladder for the bees to safely access the syrup. Some colonies do just fine with this set-up but others, for some unknown reason, end up with large clumps of drowned bees behind the screen. If your bees are in the second category, one way to prevent the carnage is to remove the screen completely and replace it with a floating platform that covers the entire open surface. A cut-down piece of plastic queen excluder stapled to some wooden strips to serve as floats serves the purpose very well. Use a screened inner cover (flat side down) if there is anxiety about the bees flying up while the feeder is being refilled.

Turning a lemon into lemonade: ways to use Boardman feeders while eliminating the downsides

Boardman feeders used in the way they are intended are lousy feeders. But a few changes can make them a great option.

1. Make a special bottom board with a slot in the back that is just wide enough for the Boardman feeder to fit through. Any robber bees must traverse the entire length of the hive to find and access the syrup.
2. Even better, set them on the inner cover (feeder and jar, or just the jar raised on rims such as two pencils) surrounded by an empty honey super. Place as many as you choose. You gain lots of capacity and deter robbing. Remember to close off the notch in the inner cover to avoid feeding all the bees in the neighborhood and inciting robbing.

Just do it

Ultimately, it isn't nearly so important how we feed our bees as it is that we feed them, when needed. Keeping our feeding goals and the characteristics of various feeders in mind, we can optimize our carbohydrate management. To ensure winter survival, feed early and feed abundantly. Then we'll have no worries until March.

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A division board feeder, aka frame feeder, takes the place of a couple of frames within a hive body and can be positioned adjacent to the cluster. Typically, it holds a gallon or so of syrup. Photo: Bailey Bee Supply