

Stahlman beekeeping notes for 2021

Issue # 43 More on Feeding bees

I am getting questions about feeding bees. I have shared my thoughts about honey versus sugar syrup. But I also realize that many beekeepers are having problems with hives at this point in the season low on honey stores and time running out for bees to collect nectar from goldenrod and aster.

I have written notes previously (2018 and 2019) regarding feeding. Looking back on the topic, there are many methods used to feed bees and various feeders. The only feeders I feel are not good for feeding in cold weather are the outside entrance feeder or a gravity feeder.

If a hive of bees is short on surplus food, there is still time for Supplementary or emergency feeding.



This is a photo of me feeding bees back in Ohio maybe 25 years ago. I bought a ton of sugar (2000 pounds) from a Big Bear store in Columbus, Ohio and it got news coverage. Who in the "H" needs a ton of sugar and what is he using it for?

Some individuals think "making booze" when that much sugar is purchased.

I ended up with a news crew wanting to see how I was using it -- so this picture illustrates me using granulated sugar to feed

starving bees. I really don't like to open hives when the temperature is below 45°.

Note the temperature when this picture was taken indicates 30°F. That was because the news people don't care if heat escapes from hives. They wanted a story!

General principle: If a hive is on the verge of starvation, one can feed anytime!

Removing the top cover releases a lot of warm air that has accumulated above the bee cluster. Note that I poured granulated sugar directly on the top bars of the hive. The dark area one sees in this picture is the bee cluster.

This picture illustrates one more point I can make. Note the absence of snow on the center of top covers. The lack of snow in the middle of the top cover indicated to me that the hive was alive with bees. The heat generated by the cluster of bees melted the snow.

Back to feeding ---

When bees are flying and active (not in a cluster) sugar syrup is the preferred method of feeding. Weather conditions still allow for some nectar gathering. The advantage of feeding early is to help the bees store the nectar/sugar syrup where they can use it later.

Another issue a beekeeper has to be concerned with is a hive with a lot of bees and a queen but very little brood. Some queens begin to shut down egg laying as days get shorter. A hive with a lot of stores, a lot of bees and a queen is not necessarily in trouble. It is a hive that needs to be watched and checked again before real cold weather arrives. Most hives I have looked at have a lot of capped brood, good sized bee populations -- A double deep hive with bees in both the top and bottom box. The lack of capped brood and larva is a red flag to me. I hate to combine it with another hive at this time. A month from now, I will feel a bit different toward that hive. At least it will have honey stores that can be shared with other hives.

I will have an article coming up in November about the brood nest – honeybee biology – regarding the need for young bees to carry a colony thru winter.

Feeding liquid sugar syrup this late in the season has some consequences.

- Stimulates robbing unless the hive is strong enough to defend itself.
- If the bees are not able to ripen the sugar syrup – the possibility of the syrup fermenting will cause dysentery. (This is why feeding formulas use less water in the formula to make the syrup).
- Liquid syrup will add moisture to the hive.
- A colony of bees in cold weather conditions can not keep sugar syrup warm. The most common feeders are division board feeders placed inside the hive replacing several frames and a top feeder in which the bees must use a tunnel or "bee-way" to reach the sugar syrup. For bees to use these feeder types, enough heat must be generated by the bees to allow for bee movement. On warm days, the bees can use these feeders.

- Sugar syrup put on a hive in cold weather condition works well with a bucket or can feeder placed over the inner cover escape hole. The area below this opening will have enough heat to allow bee movement and winter clusters are usually found in this area.
- If jars, cans, or pails are used, the rate at which syrup can be used by the bees can be controlled by the number of holes in the lid. Rapid supplementary feeding is okay when temperatures are warm but a reduced number of holes in the lid is best for emergency feeding in cold weather. (Suggestion on hole numbers – slow 3 or 4..... rapid 7 or more) Thus, if the weather is warm and bees are flying, a pail feeder would allow for the greater storage of food if it had 10 to 20 holes. Holes should be no larger than the tip of a small frame nail. Sugar syrup should not run from holes but rather drip when the feeder is jarred. My feeder punch is nothing more than a 2 ½ in drywall screw. Just a little tap is all that is needed to create a small hole.

The more preferred methods used in feeding bees in cold temperature for survival are:

- candy board
- fondant
- granulated sugar
- granulated honey frames from healthy colonies
- frames of capped honey
- A beekeeper might also use strong colonies that do not need feeding -- to fill frames of comb with sugar syrup for colonies that could use it.

Some formulas for winter feeding: (There are many formulas – maybe you have a favorite you would like to share).

Cane and refined beet sugar as well as corn syrup are okay – cane sugar is the easiest to find and I consider it better than the other choices available. **The beekeeper should avoid unrefined beet sugar, brown sugar, molasses, and sweeteners.** These can cause dysentery.

Dysentery is an intestinal infection that causes severe diarrhea and because bees cannot fly in cold weather, they defecate within the hive resulting in frames covered in feces.

The following information has worked for many beekeepers feeding during the winter.

- Use a 1:1 mix by weight of water and sugar. Pour sugar into a container and add hot water stirred continuously. (Easiest method)
- Use one 5-lb. bag of granulated sugar to 1 quart of boiling water. Remove the boiling water from the source of heat and add sugar slowly, stirring continuously. Stir until crystals disappear.
- A 2-lb. bag of powder white sugar contains 5% cornstarch. Confectionary sugar is the same as powdered sugar. A mix used during winter can be made by mixing a bag or

box of powder sugar with corn syrup or your own honey. (Store bought honey or an unknown honey source should not be used due to the possible spread of AFB). Use only enough syrup to make a dough ball that holds together without being sticky. Make hamburger sized patties which can be placed on wax paper to be placed directly above the winter cluster.

- A formula for dry granulated sugar is simple. Place a newspaper over the top bars where the cluster is located and pour the granulated sugar on the paper, close the hive and when possible check back. In an emergency, dry granulated sugar can be lightly poured onto the top bars of a hive without spilling sugar down between the frames.
- Buy fondant – sold in various sizes as cake frosting or icing. **Be sure to read the label of any container you buy.** In its simplest form, it is sugar and water. Sometimes it is stabilized with gelatin and glycerin. It is cooked to the soft-ball stage, cooled slightly, and stirred or beaten to incorporate air, until it is an opaque mass with a creamy consistency. Sometimes lemon or vanilla is added to the mixture for taste. **Avoid fondant with added flavors.** Use it much like the granulated sugar method.
- Candy for a candy board – This requires a rim and support for the sugar candy called a candy board. Boiling the syrup mixture helps caramelize the candy slightly. Avoid scorching the candy mixture. The sugar and water is heated and mixed in a metal container. The mixture is ready to pour as it begins to stiffen. One must use a candy thermometer to keep accurate track of the temperature to no more than 230°F. **[How to make the candy]** Pour two quarts of water into a large pan. Add 4 lb. of granulated sugar a little at a time until the mixture begins to boil. Check the temperature often. Stir the mix to make sure all sugar is dissolved – this may take some time for the temperature to reach 220°F. Remove the pan from the heat and set the pan in cold water. Continue to stir. As the mix stiffens and looks cloudy, it will be time to pour the solution into pans or molds to set up. Cookie sheets work well for this process. The candy can be cut up and placed in plastic freezer bags for use in the candy board.
- I found additional candy board information at: www.carolinahoneybees.com/candy-board-for-bees/