

Wintering bees in the Maritimes

Different approaches to winter wrap



Faye's three colony pack



Jerry's "apartment building" has singles in a double stack



Kittilsen's four hives on a pallet wrapped with black pallet wrap.



Tony's individual hives with home-made three side hive cozies).



John's twelve pack of singles .



Nature's winter wrap 2015



Tony's hives ... black pallet wrap over bubble wrap. January 2016.

Varroa mite control and winter bees

One of the key factors in successful wintering is a population of healthy winter bees. These are the long-lived bees the colony produces in September and October. These bees, once produced by the colony, are exempt from the nurse duties of producing and feeding brood food and royal jelly. In their case a worker bee's normal cycle of duties tied to age is suspended and this somehow results in their longevity. Winter bees or "fat bees" (bees that store but do not use vitagellin) can live up to 250 days, in contrast to the normal 35 to 50 day lifespan of workers that follow the normal life cycle. These winter bees must survive over the winter, start brood rearing in late winter (at which time their normal duties and life cycle start) and raise enough replacements to take their places before they start to die off. Spring dwindling is the result when they fail in this effort and colony deaths exceed colony births and the diminishing population of winter bees cannot maintain enough brood to replace themselves. So the beekeeper wants to have enough winter bees to re-start the colony in late winter/early spring and he or she wants these bees to be as healthy as possible so they will not be parasitized and stressed through the winter.

For the colony to produce healthy winter bees the varroa count must be down by early September so there are fewer mites to dive into uncapped larva and reproduce in the cells of what the colony plans to be their long-lived replacements. Currently, mite treatment is recommended when infestation levels at that time (determined by mite monitoring) exceed 3% (9 or more mites in a half cup (300 bees) alcohol wash). 2014 Ontario Ministry of Agriculture recommendations. Personally, I'd like to see levels less than that.

A mite monitoring at the end or part way through your treatment period, depending what mite control you use, will give you an idea of how successful your mite control is. If the answer is "not very", emergency

steps may help you save some hives. A wild card in this game are "mite bombs" - failing hives, not necessarily yours, whose bees abscond and seek shelter in your hives or which are robbed out, while failing, by your bees who bring mites back to your hives even after a successful treatment has been completed. Bee literature often states that you are your brother's keeper and that beekeepers owe it to the community at large to keep their hives healthy. Think elementary classes passing germs if kids attend school when sick. Good separation from other beekeepers can reduce this possibility. About five years ago, when my mite wipe treatment in early September failed to reduce mite populations, I immediately did three rounds of oxalic vapor treatment at one week intervals, from late September into mid October. In the spring I was fairly happy to have only lost 40% of my hives instead of the 100% that the mite monitor results pointed to.

Depending on your spring management approach, an early winter mite control is an option. For those who do not intervene until mid to late April, an oxalic "finisher" is a possibility. This finisher is applied after the winter bees are produced. It will not make the winter bees any healthier or less parasitized than they are, but it will set the mites back so there are fewer mites to jump into open cells when the bees start raising brood in late winter. Oxalic drizzle would require cracking hives open and applying drizzle to each body of a double hive, probably in November. Oxalic vaporization could be done in November or December after the hives are wrapped. Vaporization does not require opening the hives.

For those who intervene in their hives early in the year, starting in March, the finisher may not be needed. Apivar strips inserted in mid-March may be removed at the end of April before making increase, reducing the complexity and timing issues involved in treating over-wintered hives and newly made splits. Early intervention has implications for the kind of wraps you use with your hives. To permit early intervention, the top of the hives has to be made accessible without prejudicing the winterizing efforts. The traditional "wrap 'em and forget 'em until May" approach gets bees through the winter, but it will not work well for early interveners.

Are my bees strong enough to winter?

A good goal for successful wintering is seven "seams" of bees in a hive body. There are ten frames and eleven seams in a standard bee box; if there are seven seams of bees when you look down on the top bars, you have enough bees. If you have fewer than seven seams, you have to decide whether to risk it or whether it would be

better to combine hives. This determination can be made after you take off your honey and before you start feeding and administering any fall treatments. An inspection of the brood pattern and strength might help you with a decision as to which queen to keep. Newspaper, smoke and thin sugar syrup spray may all be used to facilitate the combining which should be done before the end of September, the sooner the better.

Do my bees have enough stores?

60 to 80 pound of honey and syrup is considered enough for a Maritime winter. Hives are hard to weigh. Experience helps but sometimes it is expensive to acquire. There's a "heft test" (appended); there's physical inspection - a deep super with ten frames of honey will have about 50 pounds of honey so you can judge if there is enough honey distributed between the double deeps that most people winter in; for weighing you would have to decide how much to allow for bees, frames, pollen and woodenware so as to know what to subtract from the total weight of the unit to find how much honey is stored.

Much of our fall honey granulates and if it does the bees will need liquid water to make it available to them. Liquid water is often unavailable in winter cold spells, so bees can starve with a full larder. This is the basis of the argument that one should feed 2:1 sugar syrup in the fall. This syrup will not granulate and will be available all winter if they can reach it. Some people will argue that honey is bees' natural food and sugar syrup is unnatural; the counter argument is that it is not natural for bees to overwinter in our climate and without our help they may not reliably be able to do so.

Some people like to run their hives in single brood chambers, and this approach requires a more intensive management. Singles may be stacked into "apartment building" to share heat and reduce exposure to wind. In this way, food consumption may be reduced, but early and timely checking and feeding in the spring may be needed to head off starvation.

Conversely, well fed or thrifty hives may come through the winter honey bound, and for them to build optimally in the spring a frame or two of honey may have to be removed and replaced with empty drawn foundation so they can build a brood nest.

One box or two?

How anal are you? Two box beekeepers can be a bit sloppier in their timing and can do individual wraps. One box beekeepers should stack and wrap and be alert to avert spring losses.

Location

The basics: south facing with exposure to the sun, wind protected by trees or fences with air drainage away from the hives so hives do not sit in a pocket of cold moist air.

Ventilation and top insulation

The bottom entrance is reduced to about 1 1/2 inches by 3/8 inch and mouse guarded if you wish. The top entrance is about 3/8 by 1 inch cut into the rim of the inner cover or top feeder if you use your empty top feeder as an insulation holder. Styrofoam, fibre glass, shavings or straw or some other material can be used as insulation and held above the colony by a purpose built inner cover, tray feeder or empty super. I recently read about some beeks using conventional inner covers (the ones with the escape slot) with a ceiling tile over the slot as a moisture wick. There would be insulation over the ceiling tile and the inner cover would have a notched top entrance. The ceiling tile was just a secondary way of preventing condensation freezing to the bottom of the inner cover and later dripping down on the cluster.

The Wrap

Conventional wisdom is that bees in the Maritimes don't die of cold; they die of starvation. Prairie beekeepers use insulated wrap as do some Maritimers, but many Maritime beekeepers wrap with tarpaper, not so much as insulation, but as a way of stopping drafts and encouraging solar gain. To move to new, unused food supplies, the winter cluster must shift. But the winter cluster is intersected by frames, so it is not just a simple matter of the bees moving sideways. Black wrap can, on sunny winter days, help warm the inside of the hive enough for the bees to be able to jink over to some unused honey. Black wrap seems to be adequate for the Maritimes.

A fully insulated hive, even though the insulation is black might, on the south side, retain the cold in the hive more than draw the heat of the sun. In other words, insulation might help the bees retain their own generated heat but prevent the hive gaining solar heat. In the Prairies full insulation has proven beneficial. In Alberta, though, chinooks give bees flying opportunities even when they are fully insulated. Locally, uninsulated black wrap seems to work.

In the past I have used three sided hive cozies with the south facing front of the hive covered with tar paper for solar gain. It worked, but no better than black pallet wrap with no side insulation.

My current approach (still a work in progress) is to wrap the top super of a double with two turns of bubble

wrap, then put black pallet wrap over that. My thinking is that the bubble wrap insulation is not necessary for winter survival (when the inside of the cluster temperature is about 16 degrees C) but that it might help the bees retain heat when they start brooding up and the brood nest temperature must be maintained at 33 degrees C. It is unlikely that I am going to run around in late February insulating brood nests with bubble wrap, so I thought it was easier to incorporate the bubble wrap insulation as part of the fall winter preparations. The black pallet wrap covers the bubble wrap and all hive joints for draft protection and, maybe, solar gain.

Outdoor and indoor wintering

Many westerners and some Maritimers winter hives indoors. There are stringent climate control parameters for indoor wintering which you ignore at your peril. Indoor bees are slower to brood up, but the survival rate can be higher, especially for weaker units. There are pros and cons. Better to learn your chops with outdoor wintering before experimenting with the indoor option.

Fall Preparation and the "lift test"

Preparation of the colony for winter must begin in late summer or early fall. In northern climates, preparation usually starts in August/September, though it may begin earlier depending on the location. Beekeepers must ensure that there are enough food stores for the entire winter and that the colony is healthy and strong. One of the leading causes of colony death during the winter is lack of food. Generally, there should be about 90 pounds of honey reserves for a colony in the North, since bees will not be able to forage in the winter. If there is not enough honey stored in the supers for the winter after the removal of surplus honey by the beekeeper, the hives can be supplemented with a mixture of high fructose heavy corn syrup or, better yet, sugar syrup (2 parts sucrose sugar: 1 part water by volume) in the fall. Bees will store the syrup as a substitute "honey" for use throughout the winter. Colonies that have enough honey or stored sugar syrup to survive winter will pass the "lift" test. To conduct a **lift test**, attempt to lift the colony with one hand using the handle on the back of the bottommost super. If the hive is difficult to rock forward with one hand, then it likely has enough food reserves to survive winter. If the hive is easy to lift, then it probably needs more food. (U.of Minnesota)