

Wintergreen + Salt Grease Patties

17 May 2006

Early in our SARE grant research (Amrine & Noel 2001), we began to use grease patties with wintergreen to control varroa mites during winter months. We reasoned that during November to March, when the adult bees formed the winter cluster and no brood was being produced, that the adult, female varroa mites would be very susceptible to a treatment. We reasoned that placing a grease patty with sugar and wintergreen oil above the cluster would help to eliminate the varroa mites.

Our original formula did not contain honey or salt; we added the honey in order to make the patties more attractive to the cluster. Later, our friends in Canada suggested using salt to cause the patties to be more attractive to the bees. We first used the granular salt straight from a bag of livestock salt purchased from a feed store (about \$7). We found out, during winter, that water from the air collected around the large salt crystals and dripped down onto the cluster, wetting the bees. So, we ground the salt to a fine powder in a heavy duty blender. (Less durable blenders broke down when grinding the coarse salt crystals.) The salt caused the bees to take the grease patties twice as fast as with the original formula; in 14 d vs 30 or more days.

Current Formula:

- 4.4 pounds (1814.4 g) of granulated sugar (sucrose)
- 3 ounces (88.8 ml) of corn oil
- 1.5 Pounds (680.4 g) of vegetable shortening (Crisco)
- 1 pound (463.4 g) of honey
- 1/2 Pound (226.8 g) of mineral salt (pink color) approx. \$8.00 for 50 # from feed stores.
- 2.2 ounces(65 ml) of wintergreen oil.

One batch will treat about 8-10 hives, depending on the number of brood chambers, size of patties, etc. We Place 5 small patties (about 2 ozs each; the size of small hamburgers on a grill) on top of each brood chamber and add a 1/2" [1.27 cm] "roll" across the entrance, about 3/4" [1.9 cm] back in (otherwise, rain will wash it away).

NOTE: Colonies must be treated using this system BEFORE mite populations reach injury level to the colony. We have observed once the colonies reach parasitic mite syndrome (deformed wings), they are too weak/sick to consume enough of the patties to do any good.

Wintergreen oil is on the EPA- FIFRA inert list 4A not the active list 25(b). For more information on the EPA - FIFRA list go to this internet site: http://www.epa.gov/PR_Notices/pr2000-6.pdf

We have since found that putting the grease patties on in June and leaving them on all year gives good knock down of mites throughout the season [doubles or triples the natural mite fall through the screened bottom boards] and prevents the mites from building up to such high levels.

When the wintergreen-salt grease patties are used consistently [replaced every 2 weeks or so during the summer], we see no tracheal mites and varroa mites seldom exceed an infestation of 5 per 100 cells.

We always apply the grease patties in fall and keep them on all winter; they should be checked every month or so and replaced as needed. If you do not feed salt to your bees, they will find it in pools of urine in barnyard footprints, or on discarded yellow diapers along roadsides, etc.

Why do grease patties work?

The vegetable oil makes the bees' hair and cuticle very slippery and the mites' suckers on each foot fail to gain purchase, and the mites fall off more often than normal. The wintergreen irritates the varroa mites,

causing them to speed up and turn rapidly. Thus, the combination of the wintergreen-salt grease patties with a screened bottom causes large numbers of mites to drop off the bees and fall out of the hive.

Modification For the Small Hive Beetle, *Aethina tumida* Murray (Coleoptera: Nitidulidae) -

In South Carolina, Georgia and Florida, where the small hive beetle is a pest, our friend Mr. Crocker in SC found that adding more wintergreen to the grease patty repelled and sometimes killed the hive beetles. Thus we increased the wintergreen to 2.2 ounces or 65 ml. Too much wintergreen will cause the queen to be balled; we do not recommend adding more than 60 ml or two ounces to a batch of grease patties.

Mr. Crocker also observed that the small hive beetle was seldom a problem if varroa mites were controlled. But, in colonies with varroa mites, the small hive beetle often became a severe problem.

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Please, DO NOT MAKE EXTENDER PATTIES!

Adding antibiotics such as Terramycin® or Tylosin® to a grease patty should never be done.

This is how the bacterial causal agent of American Foul Brood, *Paenibacillus larvae*, became resistant to Terramycin. When applied in a grease patty, the antibiotic becomes chronically present in the hive in a concentration less than a lethal dose; this allows the bacterium to eventually develop an enzyme capable of splitting the Terramycin® molecule, rendering it useless. Some individuals are adding Tylosin® to grease patties in order to make a convenient antibiotic treatment to apply to hives. Do not do this as the bacteria will develop resistance to this new antibiotic as well, probably in about five to seven years. Apply the antibiotic as directed to the label. In most cases it should be applied as a dry powder, as an additive to confectioner's sugar (powdered sugar), and sprinkled around the outside edges of the brood nest, onto the top bars in the brood chambers.

Do not use or sell honey gathered by the bees when antibiotics are applied.

Remember, that for American Foul Brood, antibiotics are not cures; they only prevent spread of the disease to young larvae – and only while the antibiotic is administered to a hive. As soon as the antibiotic is removed, the residual spores in the scales in the brood chambers will be fed to the young larvae and cause a resurgence of foul brood. You must remove the scale from the hives by burning old brood frames, or treating old brood frames with steam sterilization, by cooking in lye baths, by immersing in hot paraffin, or by using gamma radiation from Cobalt 60 sources. Anything less than these treatments will not control AFB.

Applying Grease Patties



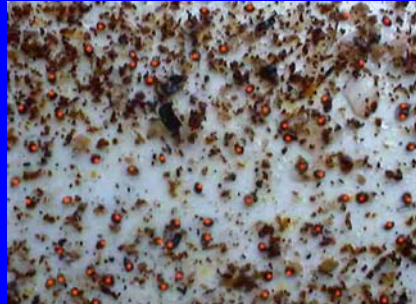
Salt Patties on brood chamber



Rolled Salt Patty at Entrance



Screened Bottom Board



Dead mites (red dots) on sticky board