

Powdered sugar dusting in bee colonies as varroa control

A bee-friendly way to knock down varroa mites

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Introduction

The powdered sugar dusting is a non-chemical approach to the control of varroa mite in the honeybee. The technique was developed by Dr. Kamran Fakhimzadeh, University of Helsinki, Finland in 2000. The method has proved to be an effective means of reducing varroa mites in honeybee colonies and exerts a significant impact on mite reproduction.

When the bees are covered with powdered sugar their body become slippery and the varroa lose their ability to cling to the bees, the granules get into the gripping surfaces of the feet and they fall to the floor of the hive. Additionally, the powdered sugar promotes the dusty bees to clean themselves, causing more mites to be dislodged in the process. This technique has no adverse effect on adult bees and the capped brood, and the sugar particles do not enter the spiracles and their tracheal ducts in the treated bees. The technique can be used at any time, even during a honey flow, and as often as needed to control the mite. It is also used as a means for detecting and assessing varroa mite infestation. The method is in practice in the USA, Germany and Ireland, and most who have used it say it works.

Advantages of the method

- It is inexpensive
- It is an organic method to reduce mite level
- The method does a good job of knocking down the mites on the bees and combs over the 24 – 28 hours
- High level of mite drop
- There is no side effect of dusting on colony development
- It will not contaminate honey
- The sugar does not annoy the bees and does not leave a residue
- Formic and oxalic acids are strong and toxic, result in queen loss, hurt the brood a bit and leave a residue
- Formic and oxalic acids cannot be used when it is warm or hot, whereas powdered sugar can be used any time of the year that the bees are not in tight cluster.

Drawbacks to sugar dusting

It may draw ants and initiate robbing during a nectar dearth.

Method of Application

To use this technique, one needs the following materials:

1. **Powdered sugar.** Use approximately 125 grams (1 cup) of sugar per hive with a single chamber, or 250 grams (2 cups) for colonies with double boxes.
2. **Sugar shaker or a jar fitted with sift screen.** (See the pictures below)
3. **Bee brush**
4. **Sticky boards for capturing mites.** The sticky board is basically a cardboard or thick paper thinly smeared with sticky substance e.g. vegetable oil or Vaseline, and covered with a metal or plastic screen of approximately 3 mm mesh; and placed on the bottom board. The purpose of the screen is to keep the bees off. The sticky board should be large enough to cover the hive bottom board. The mesh screen used should retain the bees while letting the mites pass through. The mesh screen should have a thin rim (frame) of 20 x 6 mm of wood. The falling mites stick to the board and cannot return to the hive and eventually die.



Steps

Dusting of powdered sugar is done in combination with the sticky board or a screen bottom board. Powdered sugar does not kill the varroa mites, but causes the mites to drop to the bottom. If there is not a sticky board placed on the bottom, the mites will crawl back up to reinfest.

1. **Insert the sticky board with the smeared side up in the hive and cover with the framed screen.**
2. **Smoke the colony.**
3. **Remove the cover and smoke the bees down off the top bars.**
4. **If the colony has double boxes, separate them, and dust the first one on the bottom, then stack the second on the top, and dust again.**

There is no need to remove the frames from the hive. Sift or dust the powdered sugar over the top bars of the frames and into the bees in the seams. Brush powdered sugar from the tops of the frames to between them. You can test your technique after a few minutes by pulling frames from the hive to see if there are white dusted.



Dusting the sugar over the frames.

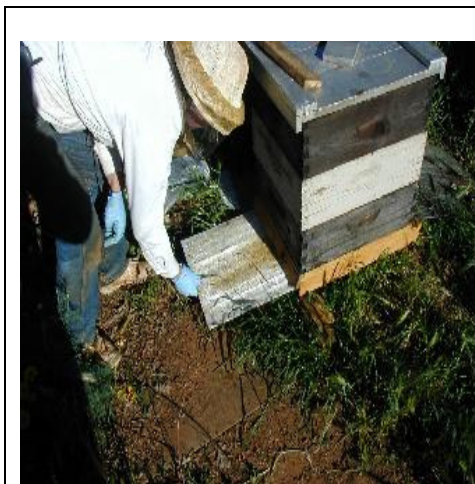


Brushing the sugar between the frames.

Photos source: www.countryrubes.com

Some beekeepers remove each frame and dust each side with a sprayer over the hive until bees are white with powdered sugar to knock all the adult varroa in the hive. However, dusting each frame is labour intensive.

5. Replace the cover.
6. After a day remove the sticky boards, scrape the sugar and mites accumulations and brush them into a trash bag and burn. Do not leave it on the ground as it may attract ants.



Removing board with sugar and mites.



Scraping sugar and mites into a trash bag.

Photos source: www.countryrubes.com



Bees become coated with powdered sugar.

Photo source: www.countryrubes.com

7. Replace the oil on the sticky board and reinsert.
8. Repeat treatment several times. As every day, new bees emerge as adults, and mites are emerging with them, this can eliminate a substantial portion of mite population.

If a hive is heavily infested, a lot of mites will be seen on the sticky board the first treatment. If you see a lot of mites, dust weekly. This knocks mite levels way back. Continue until you are getting a few mites. If there are few mites (3 mites drop in 24 hours period) wait a month.

Plan to do this treatment in autumn instead of Apistan. Do the dusting before the bees begin to form clusters. Mites inside the clusters will not be affected by the sugar, because not all the bees will be dusted.

Tips

- Dust the bees with fine powdered sugar
- Granulated sugar can be grounded in a grinder to produce powdered sugar
- Use only white sugar
- The powdered sugar must be dry and not damp
- Dust only adult bees as many as possible
- Sugar treatment will not affect mites in capped brood cells as well as on foraging bees in the field. For effectiveness the treatment is repeated 3 or 4 times in spring at 5 to 7 day intervals to control mites in sealed cells and on the foragers. Adult mites develop in 6 to 10 days in the cells before emerging with bees. If you have a severe infestation, you can dust every 3 days for 21 days to capture mites that emerge from brood.

Links

[Sugar Dusting for Varroa Mite Control](#)

[Powdered sugar for mite control!](#)

[The Oliver 15-second sugar dust method Page 2](#)

<http://www.countryrubes.com/instructions/powderedsugartimeline.html>

http://www.youtube.com/watch?v=Y7C_pV9ig4c