

# VARROA MITE INSPECTION

## The “Stress-less” Sugar Shake Method

### MATERIALS NEEDED

- Quart canning jar with separate ring and lid
- 8 x 8 wire mesh (#8 hardware cloth)
- powdered sugar
- Frame grippers or strong hands,
- White dinner plate or bowl (plastic preferred) partially filled with water,
- Optional - Queen-catcher

### PREPARATION – The Shaker

- A. **Take** the quart canning jar and remove the ring, lid, and place lid aside.
- B. **Cut** out a round piece of “8-mesh hardware cloth” and fit it into the upper part of the ring.
- C. Jars WITH embossed markings - **mark** the jar at the ½ cup level, using a permanent marker or tape line,
- D. Jars WITHOUT embossed markings - **take a measuring cup** and pour ½ cup of dry cereal into it, such as Puffed Rice, Fruit-Loops, Sugar Pops, etc. These cereals simulate the average size of a honeybee. **Pour** this measured cup into the jar and **mark** the top level of the cereal, using a permanent marker or tape line. *Note: Skip steps A through D during successive inspections,*
- E. **Pour** two table spoons of “powered” sugar into the bottom of the jar,
- F. **Separately place** the “jar” and “screened lid” near the hive for easy access,
- G. **Water plate** – place this partially-filled plate near the hive.

The following procedure is safer for bees and the beekeeper than the standard SHAKE, BRUSH, DROP, or WIPE method of getting bees off the brood frame. It greatly reduces the stress level of the bee, beekeeper, and the number of bees flying around.

### GATHERING THE BEES – Properly performed, this process takes less than 60 seconds.

1. **Use** frame grippers, or hands, and **slowly** pull-out one a good “capped-brood frame” having plenty of bees on both sides. **DO NOT use a honey combed frame for sampling.**
2. **Thoroughly inspect** both sides to **ensure** that the **Queen IS NOT** present on that frame.
  - a. If the queen is present, either choose another “brood frame” with a comparable number of bees **OR** use a queen-catcher, catch the Queen, and place her on another frame in the hive.
3. **Hold** the frame by the “top bar” and **turn it vertical** so that the “top bar” is facing the palm of your hand,
4. **Take the jar with powdered sugar** and while holding the frame in your opposite hand, **slowly and carefully** drag the open end of the jar from the “top edge” downward and slightly above the comb towards the “bottom edge.”
  - a. **Avoid pressing into the comb** as you collect the bees,
  - b. **Repeat step 4** until you have enough bees to reach the ½ cup level (about 300 bees). You may need to sample from the opposite face of the frame to get enough bees,

Reason for dragging the jar downward – by dragging downward, **Newton’s Law of Gravity** causes the bees to gently “fall” into the open jar and greatly reduces their chance of flying up into your face.

**WARNING:** If, you “push” the open end of the jar “upward,” then your risk the bees flying away, or you may accidentally dig the jar into the comb, possibly damaging capped brood cells or larvae.

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5. **When** you have collected ½ cup of bees, place the jar down near the screened lid and put the lid on top of the jar. The bees will buzz some however, the powdered sugar reduces their ability to fly out of the jar.
6. **Place** the sample brood frame back in the hive,
  - a. **Secure** the lid on the jar and **slowly** roll the sampling of bees a few times to ensure that each bee receives a coating of powdered-sugar. **Moderately shake** the bees to dislodge any varroa mites, **pause** for 5-seconds and repeat this process.
7. **Hold** the jar over the container of water and shake the powered-sugar onto the plate. The water dissolves the sugar, revealing any (red) varroa mites.
8. **Return** the remaining coated bees to the hive where the other bees will clean them.
9. **Count** the mites in the water. The following calculation reveals the percentage of infestation of the sampling.
  - a. The **acceptable level** for 300 bees is 9 mites, so  $9/300 = 0.03$  or 30% infestation. Considering a 3:1 ratio (3-mites per 100 bees) is **acceptable**.

Example one: You count 13 mites in the ½ cup sampling, **thus**,  $13/300 = 0.43$  or 43 % infestation sample. This is above the acceptable level and **you need to evaluate other frames to consider a mite treatment**.

Example two: You count 6 mites in the ½ cup sampling, **thus**,  $6/300 = 0.02$  or 20% infestation. This is below the acceptable level. No treatment needed for this sampling.