

Varroa mites

a step-by-step guide to monitoring in New York

When should I monitor?

Varroa mites (*Varroa destructor*) are the most devastating threat to honey bees and are ubiquitous throughout New York. Monitoring your hives allows you to assess the severity of *Varroa* infestations and treat your colonies when mite numbers exceed the treatment threshold (Table 1). If left untreated, most colonies will die within 1-2 years. Monitoring should take place once a month from April to October. It is **essential** to monitor again following treatment application to determine treatment efficacy. Sampling all colonies in a bee yard is ideal. If this isn't realistic because the apiary is large, randomly sample 10% of the colonies in each bee yard. Maintain written records of your monitoring to track mite populations.

Table 1. Treatment threshold for *Varroa* mites in the Northeast. Apply treatments when these thresholds are met or exceeded.

Number of Mites in May - July	Number of Mites in August - September
2 mites/100 bees	3 mites/100 bees

In New York, *Varroa* levels most often exceed the treatment thresholds during autumn, beginning in the month of August. Parasitic Mite Syndrome—an advanced stage of *Varroa* infestation and its accompanying viruses—can develop at this time of year if mite levels are left unmanaged. *Varroa* populations reach their highest point in October, so it is critical that beekeepers continue to monitor until this time of year.

How should I monitor?

There are two monitoring methods that are good indicators of *Varroa* mite levels: the powdered sugar roll and the alcohol wash. Both of these methods require assessing 300 bees. In order to collect 300 bees for analysis, shake the bees off of a frame from the **brood nest** into a shallow plastic container. Use a measuring cup to collect a ½ cup of lightly packed bees, which is equivalent to about 300 bees. Make sure you don't accidentally sample the queen.

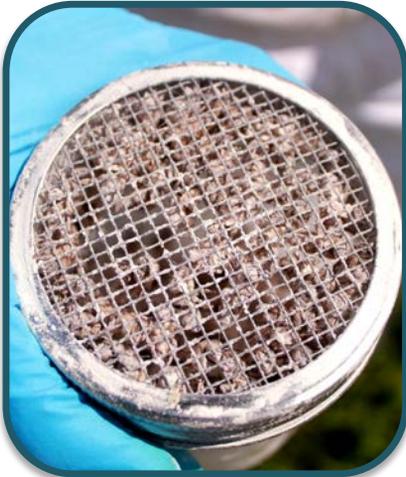


Gathering bees for monitoring. Monitoring methods require measuring 300 bees (roughly a ½ cup).

Counting *Varroa* mites shaken into a bucket from either the powder sugar roll or the alcohol wash (19 shown here). Adult mites are reddish brown in color, oval in shape, have 8 legs, and are about 2 mm wide.



Choose the method that works best for your operation



Powdered Sugar Roll

1. Collect 300 bees in a clear plastic or glass jar with a $\frac{1}{8}$ inch wire mesh screen lid
2. Add 2 Tbsp. of powdered sugar and gently swirl jar for 1 minute to coat bees
3. Sit jar in the shade for 1 minute. Bees will fan their wings, which helps dislodge mites
4. Turn jar upside down and shake vigorously for 2 minutes over a light colored pan to catch *Varroa* mites
5. Pour water into the pan to make the mites more visible
6. Count the mites in the pan and record these results
7. Divide this number by 3 to get an average mite count per 100 bees



Alcohol Wash

1. Collect 300 bees in a clear plastic or glass jar
2. Add 25% (or higher) alcohol to the jar to completely submerge the bees and add lid. Ethanol, ethyl alcohol, or isopropyl alcohol work well. Windshield washer fluid or soapy water are suitable alternatives.
3. Shake contents vigorously for two minutes to dislodge mites
4. Remove lid and pour the mixture over a $\frac{1}{8}$ inch wire mesh screen into a light colored pan
5. Count the *Varroa* mites in the pan and record these results
6. Divide this number by 3 to get an average mite count per 100 bees

Contact Information

Emma Mullen, Information Sheet Author
Dyce Lab, 201 Freese Road
Cornell University
Ithaca, NY 14850
607 319 0752
ekm75@cornell.edu

Joan Mahoney, Information Sheet Resource
NYS Department of Agriculture and Markets
Division of Plant Industry, 10B Airline Drive
Albany, NY 12235
(518) 457-2087
Joan.Mahoney@agriculture.ny.gov