

Alcohol washing

BACKGROUND

Alcohol washing is a quick and effectively method for detecting the presence of Varroa mites, as well as monitoring colony mite levels. The disadvantage of this method is that it kills the bees that are sampled. The alcohol wash method can remove 70-80% of external Varroa mites present on adult honey bees. The method can also be used for Tropilaelaps mites and Braula fly surveillance, however, with less confidence because these pests are not present in large numbers of worker bees.

It is recommended that all beekeepers conduct this monitoring technique as it is rapid and simple. Very little equipment is required and it can be easily performed during routine hive inspections. This technique is more effective when little brood is present, however it will provide measurable results when there is also significant quantities of brood and the sample bees are taken from the centre of the brood nest.

Equipment required

- 2 plastic jars, about 500 grams in size and with wide mouth
- 3mm gauze wire mesh
- Soldering gun
- Cup (about 250 mL)
- 100 mL of 25% rubbing alcohol or 25% methylated spirits
- Newspaper or large plastic sheet
- Protective clothing, smoker and hive tool
- Magnifying lens (if available)
- A container (e.g. small white bucket)
- Filter paper (e.g. cloth, coffee filter)

How to make an alcohol washing kit

- Acquire two identical plastic jars (such as large peanut butter jars) with screw top lids.
- Carefully remove (by safely cutting) the inner section of the closed-end of the screw-top lids to acquire the desired effect.
- Cut out a 3mm gauze wire mesh and place between the two open screw-top lids.



A plastic lid with the inner removed and covered with a section of 1/8" wire mesh. Image courtesy Randy Oliver, www.scientificbeekeeping.com.

- Plastic jar lids are commonly made from polypropylene and cannot be glued effectively. Therefore, you will need to heat weld them together. A soldering gun is best suited to this purpose. A deep weld is required as a light weld may crack with use.



Procedure #1

- Place about 100 mL of alcohol in one of the jars, or enough so that the bees will be covered.
- Place a large sheet of newspaper or plastic beside the hive to be tested.
- Light a smoker, open the hive and remove a frame which contains a lot of brood. If the queen is present place her back in the hive.
- Shake bees from a brood frame onto the newspaper/plastic sheet/plastic tub.
- The field bees will mostly fly out of the tub immediately, leaving behind predominantly nurse bees which are likely to carry a greater quantity of phoretic Varroa mites.



A soldering gun joining the two plastic lids together, with both inner lids removed and the 1/8" wire mesh sandwiched between the lids. Image courtesy Randy Oliver, www.scientificbeekeeping.com.

- Connect both of the jars to the lids and make sure that the lid connection is strong.
- You now have a functional mite shaker for conducting the alcohol washing test.



A functional mite washing kit, including a white bucket, mite shaker, bottle of 25% alcohol, a measuring cup and a sieve. Image courtesy Randy Oliver, www.scientificbeekeeping.com.



Shake a brood comb into a container. Image courtesy Daniel Martin, VIC DEPI.

- Pour about 300 bees (1/2 a cup) into the jar containing around 100ml of 25% rubbing alcohol or methylated spirits.



Pouring bees into the mite shaker. Image courtesy Daniel Martin, VIC DEPI.



Shake the mite shaker jars vigorously for around 20 seconds. Image courtesy Daniel Martin, VIC DEPI.

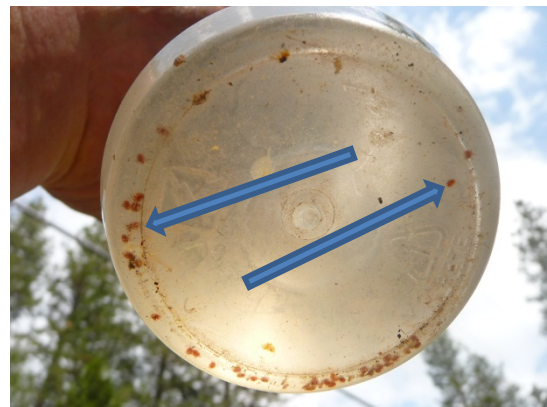
- Put the solid lid on the jar quickly to prevent the bees from escaping.

- After 20 seconds and the last shake, jiggle the jar so that the alcohol drains through the bees into the bottom jar. If you don't jiggle, some of the mites may get stuck on the bees in the top jar.
- Once settled, raise the bottom of the jar to view any mites that have been dislodged from the bees.



Screw the two mite shakers together firmly. Image courtesy Daniel Martin, VIC DEPI.

- Invert the shaker so that the bees are now in the top jar.
- Shake the jar vigorously for 20 seconds, ensuring the honey bees are covered in alcohol. It is essential to maintain a vigorous shaking motion in order for the alcohol to swirl with the bees in the top jar.



A large number of Varroa mites present. The blue arrows indicate some at the bottom of the mite shaker after settling. Image courtesy Daniel Martin, VIC DEPI.



Procedure #2

- This method does not require a soldering gun to join plastic jars together.
- Get a plastic jar with an intact covered lid.
- Follow the first 6 steps as outlined in Procedure #1.
- Shake the bees in the jar with the alcohol for 20 seconds.
- Place a piece of cloth over the top of a small bucket or container, with the 3mm gauze wire mesh slightly over the cloth.
- Pour the contents of the jar through the mesh and over the cloth. The mesh lid will collect the bees but enable any mites to pass through and be collected on the cloth.
- Inspect the surface of the cloth thoroughly for mites. A magnifying lens can be used if available.
- Higher recovery rates of Varroa mite can be achieved by refilling the jar containing bees with water and rinsing the bees once or twice. Two rinses will recover more than 95% of Varroa mites present on the bees.
- This method does not require a soldering gun to join jars together.

Reporting

- If Varroa mites, Tropilaelaps mites or Braula fly are suspected, report the finding immediately to the relevant state/territory agriculture agency through the **Exotic Plant Pest Hotline (1800 084 881)** or by directly reporting to the state/territory Chief Plant Health Manager.