

Sugar shaking

BACKGROUND

Sugar shaking of honey bees is a passive method to detect external parasites such as Varroa mites, Tropilaelaps mites and Braula fly. It is a quick and easy method does not kill the honey bees sampled. The method works by the fine sugar particles dislodging external parasites by stopping their sticky pads (feet) gripping onto honey bees and also by stimulating grooming behaviour of honey bees. The sugar is then separated from the bees and inspected for external parasites. The efficiency of this surveillance method increases the warmer the atmospheric temperature. This method will not detect very low infestations of external parasites in hives, and is not as effective as the alcohol wash method.

Equipment required

- Jar (preferably plastic) about 500 – 750 grams in size and lid with holes 3-5 mm in size (drilled or use 1/8 gauze wire mesh)
- Pure icing sugar
- Cup (about 250 mL)
- Tablespoon
- Newspaper or large plastic sheet
- Container to hold water (e.g. small white bucket) or white sheet of paper/cardboard
- Protective clothing, smoker and hive tool
- Magnifying lens (if available)
- Filter paper (e.g. coffee filter) or fine sieve



Sugar-shake jar, pure icing sugar and measuring spoon. Image courtesy of Daniel Martin, VIC DEPI.

Procedure

- If using a container or bucket to collect sugar, half fill with water before commencing the sugar shake.
- Place 1 tablespoon of icing sugar into the jar.
- Place a large sheet of newspaper or plastic beside the hive to be tested.
- Light a smoker, open the hive and remove a frame from near the centre of the brood. If possible, take adult bees from at least 3 brood frames. If the queen is present place her back in the hive.
- Shake the bees off the frame onto the newspaper/plastic sheet and pour about 300 bees (1/2 a cup) into the jar.



Honey bees are poured into a jar for sugar shaking. Image courtesy of NSW DPI.

- Put the lid on the jar quickly to prevent the bees from escaping.
- Roll and gently shake the jar for 2-3 minutes, ensuring the honey bees are covered in sugar. Be careful not to lose any sugar. Do the shaking in a sheltered position protected from wind, so any mites present do not blow away.



- Leave for 2-3 minutes before rolling and shaking again for another 2-3 minutes. The longer the bees are rolled in the sugar, the more effective the technique.
- Shake the sugar out of the jar through the holes/mesh into a container/bucket half filled with water or shake onto a white sheet of paper/cardboard.
- Release the bees from the jar onto the ground at the hive entrance in case queen is present and inspect the empty jar thoroughly for mites.



Honey bees coated in icing sugar are returned to the hive entrance after sugar shaking. Image courtesy of Randy Oliver, www.scientificbeekeeping.com.au

- If the sugar was shaken into a bucket or container of water then the sugar will dissolve and any Varroa mites will float on the surface. Inspect the surface thoroughly for mites. A magnifying lens can be used if available.
- Alternatively the water can be gently stirred to dissolve all the sugar and then passed through filter paper (e.g. coffee filter) which can then be thoroughly inspected for Varroa mites.

- If the sugar was shaken onto a white sheet of paper or cardboard, the sugar needs to be spread finely across the paper to ensure any Varroa mites that are present are not covered with sugar particles (as below). Inspect thoroughly for Varroa mites.



Inspect white piece of paper / cardboard for mites. Image courtesy of Randy Oliver, www.scientificbeekeeping.com.au

- Alternatively the sugar can be poured through a very fine sieve that will capture the Varroa mites while allowing the sugar to pass through. The sieve contents can then be thoroughly inspected on a sheet of white paper. Note that wind can be a major problem for this particular technique.

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.

