

## **Amateur Experiment for Ormskirk & Croston Branch 2009**

Whilst this document may appear long and complicated, please bear with it. The aim is that the experiment should be simple and straightforward. Great detail is given so that everyone participating understands why they are doing it and can do precisely the same. In this way, some practical, useful and evidence-based advice to beekeepers may result.

There is also a bonus experiment which participants may wish to try as a simple addition to the main project. For details, please see the end of this document.

In due course, we hope to post photographs on the Branch website to accompany the experiments. ( <http://www.ormskirkbeekeepers.co.uk> )

### **Aim of the experiment.**

To assess the effectiveness of alternative methods of applying icing sugar as a method of varroa control.

### **Why this experiment?**

Pyrethroid-resistant varroa mites mean that now Apistan strips are frequently ineffective and cannot be relied on to control varroa. Alternative methods are required. Dusting bees with icing sugar is recognised as an alternative method as part of Integrated Pest Management (IPM). It is thought to be relatively harmless (although temporarily disturbing) to bees, results in no harmful chemical residues in the hive and carries no risk of varroa becoming resistant.

(Please see the Bonus Experiment section at the end of this document for an additional study of bee health.)

However different techniques for applying the icing sugar are recommended by various beekeepers. **But does the technique make any difference?**

We want to assess how two different techniques compare and if their effects differ on varroa control, the colony's general health and mood, and the honey production.

Method 1 (below) is probably easier and quicker. So if it is as effective or nearly so, then it may be a sensible choice, particularly if you keep your bees in your garden. This experiment may answer this point.

### **Summary of the two alternative methods to be assessed.**

(a) **Method 1.** Regular application of icing sugar from the top of the hive.

(b) **Method 2.** Removing and dusting each brood frame, but only if mite drop indicates this is required.

### **Method 1: regular application of icing sugar from the top of the hive.**

(a) Materials:

- Mesh floor and insert tray.
- Spare mesh to act as a sieve.
- Approx. 200g (7oz) of icing sugar per application (i.e. one "cup" from the inside of a rapid feeder.
- Brush.

(b) Method:

- Carry out each inspection otherwise entirely as you would normally from April to August.
- Ensure clean insert tray is in position beneath the mesh floor.
- Following every inspection, place spare mesh (perhaps use 2nd mesh floor?) directly over brood box without queen excluder in place.
- Spread icing sugar generally over spare mesh, then brush through mesh.
- Remove spare mesh and reassemble hive as usual.
- Leave insert tray in place 24 hours, then count mite drop for record.
- After 24 hours, remove insert tray.
- Twice per month (start and middle), place insert tray under mesh floor of hive. After 3 days, count mite drop and divide by 3, so the average daily drop can be recorded. These counts are **in addition to** the count 24 hours after dusting.

(c) What to record:

- Please use the attached record card.
- Dates when dusted.
- Mite drop 24 hours after dusting.
- Daily average mite drop as a result of the twice monthly counts.
- Which year the queen was raised.
- What (or approximate!) race of queen (if known).
- Assessment of development and temperament of the colony.
- Disease.
- Swarming.
- Honey yield.
- Type of hive.
- Any other IPM techniques used (and when) throughout the season.

**Method 2: dusting each frame, but only if mite drop dictates.**

(a) Materials:

- Mesh floor and insert tray.
- Flour dredger.
- As much icing sugar as is required to dust the bees on the brood frames.

(b) Method:

- Carry out each inspection otherwise entirely as you would normally from April to August.
- Monitor hive drop at least once per month for 3 days, then dividing the number of mites by 3 to calculate the daily average drop.
- Only if the mite drop daily average reaches the levels where control is required should icing sugar be applied. (See link [http://www.dave-cushman.net/bee/csl\\_ipm4\\_v3.html](http://www.dave-cushman.net/bee/csl_ipm4_v3.html) )
- If dusting is indicated by the daily average mite drop, remove each frame from the brood box and thoroughly dust the bees with icing sugar.
- If dusting with icing sugar, ensure clean insert tray is in position beneath the mesh floor first.
- Leave insert tray in place 24 hours, then count mite drop for record.

(c) What to record:

- Please use the attached record card.
- Dates when dusted.
- Mite drop 24 hours after dusting.
- Daily average mite drop from monthly count.
- Which year queen was raised.
- What (or approximate!) race of queen (if known).
- Assessment of development and temperament of the colony.
- Disease.
- Swarming.
- Honey yield.
- Type of hive.
- Any other IPM techniques used (and when) throughout the season.

**General Points.**

Ideally each participant in this experiment should manage their two hives in the same apiary. Everything else should be the same: the management regime, the strain of bee (as far as possible) and the type of hive. The aim is to see if the method of icing sugar dusting makes any difference.

Where a beekeeper has only one hive, they are very welcome to take part. If they know another beekeeper nearby who has one or more hives, each can agree to run their hive exactly the same except using different icing sugar methods.

It is anticipated that merely increasing awareness about the mite drop may well result in the bees doing better. Of course this would be a wonderful position to be in.

### **Bonus Experiment.**

There is some suggestion that dusting bees with icing sugar may damage larvae by drying out their skins. Of course any damage to the colony is likely to be much less than leaving varroa uncontrolled.

As an *additional* study to add to the main project, it would be interesting to see whether there is any evidence for this.

*Method:*

- *mark one frame in the centre of the brood nest of each hive. Each face of the frame should be marked so it can be distinguished from the other.*
- *immediately before the colony is dusted, both faces of the marked frame should be photographed.*
- *24 hours after dusting, the marked frame should be examined again and state of the brood on that frame assessed in comparison with the earlier photograph.*
- *Record the results, including the size of any affected area and the approximate stage of development of the larvae affected. In particular, note whether the larvae appear to have been damaged. (The bees may have removed any damaged larvae and the queen re-laid in the same cells.)*

**Of course this is an addition to the main project. Participants can choose merely to run the main experiment only. It will not affect the merits of that.**

### **What to do next?**

Please contact Derrick Harris to confirm you will take part in the experiment.

Towards the end of the 2009 season, a questionnaire will be circulated for people to confirm their results and observations.

Of course, if anyone has any comments now, please let me know.

Derrick Harris [derrick.harris@ormskirkbeekeepers.co.uk](mailto:derrick.harris@ormskirkbeekeepers.co.uk)