



National Bee Unit

Estimating *Varroa* mite populations

***Varroa* infestations are often missed by beekeepers until the infestation becomes severe. You should monitor for *Varroa* at least four times each season: early spring, after the spring honey flow, at the time of honey harvest and late autumn. Knowing how many mites are present in a colony is vital so that you know when to take appropriate action. This sheet explains three methods (set out below) commonly used to calculate *Varroa* populations. Two give a moderately accurate assessment, and the third is a quick guide. You must remember that the 'quick guide' is not an accurate assessment.**

Natural Mite Mortality

The system is accurate in the winter and summer but during March, April, September and October the results are less accurate. No treatment or control should be carried out during the sampling period

- 1) Using an open mesh floor (OMF), coat your monitoring insert with oil or Vaseline so that the falling mites cannot return to the colony;
- 2) During summer collect debris for at least 7 days;
- 3) During winter collect debris for a longer period;
- 4) Add the total number of mites collected and divide this figure by the number of days the sample was taken over and you have a daily mite fall figure;
- 5) Multiply the daily mite fall figure by one of the following.

Winter i.e. November to February x400

Summer i.e. May to August x30

March, April, September and October x100 (These periods are approximate only)

NB It is easier to look at hive debris daily and count the mites, which are usually clearly visible. Make a note of the number and clean the insert off before replacing it under the floor. Take an average over 7 days.

Drone Brood Uncapping

- 1) Select an area of sealed drone brood at an advanced stage, i.e. purple eyed stage;
- 2) Insert a honey uncapping fork under the cappings and lift out the pupae. You may find that twisting the fork will ease the removal of the cappings;
- 3) Mites present will be clearly visible on the pupae. Count the number of pupae with mites on (a), and the number of pupae sampled (b).

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- 4) Calculate the number of sealed drone cells present in the colony.
- 5) Divide the number of infested drone pupae by the number of drone pupae sampled.
That is (a) divided by (b).
- 6) Multiply the result by the number of sealed drone cells in the colony and multiply that figure by ten to give the mite population

N.B. This method becomes more accurate with a large sample, which should be in the region of 100 pupae.

Quick Guide

Fork out a sample of drone pupae as in method 2. If 1 in 50 pupae have mites on them then the infestation is light and will probably need no control, if 1 in 20 pupae have mites on them, then it is medium, if 1 in 10, then it is heavy. If 15% of drone brood is infested then it indicates that the colony may be at risk of collapse.

If you have a lot of hives check a representative sample. Strong colonies and those with high yields often have high infestations.

Other methods

In other parts of the world adult bee sampling is also used to assess Varroa mite populations. This can be very precise but requires an accurate assessment of the total population of bees in a colony. As a result, it has not been included on this sheet.

The National Bee Unit Varroa Calculator

To assist beekeepers with these calculations an easy to use computer model is available on the National Bee Unit website at:

<https://secure.fera.defra.gov.uk/beebase/public/BeeDiseases/varroaCalculator.cfm>

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