National Bee Unit

The Food & Environment Research Agency

Estimating *Varroa* mite populations

Varroa infestations are often missed by beekeepers until the infestation is severe. It is therefore important to regularly monitor for the pest and to be able to assess when the infestation is likely to have an impact on the colony. The key to successful *Varroa* control is knowing how many mites are present in a colony and when to take appropriate action. This sheet explains three methods 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.

Method 1.

Natural Mite Mortality.

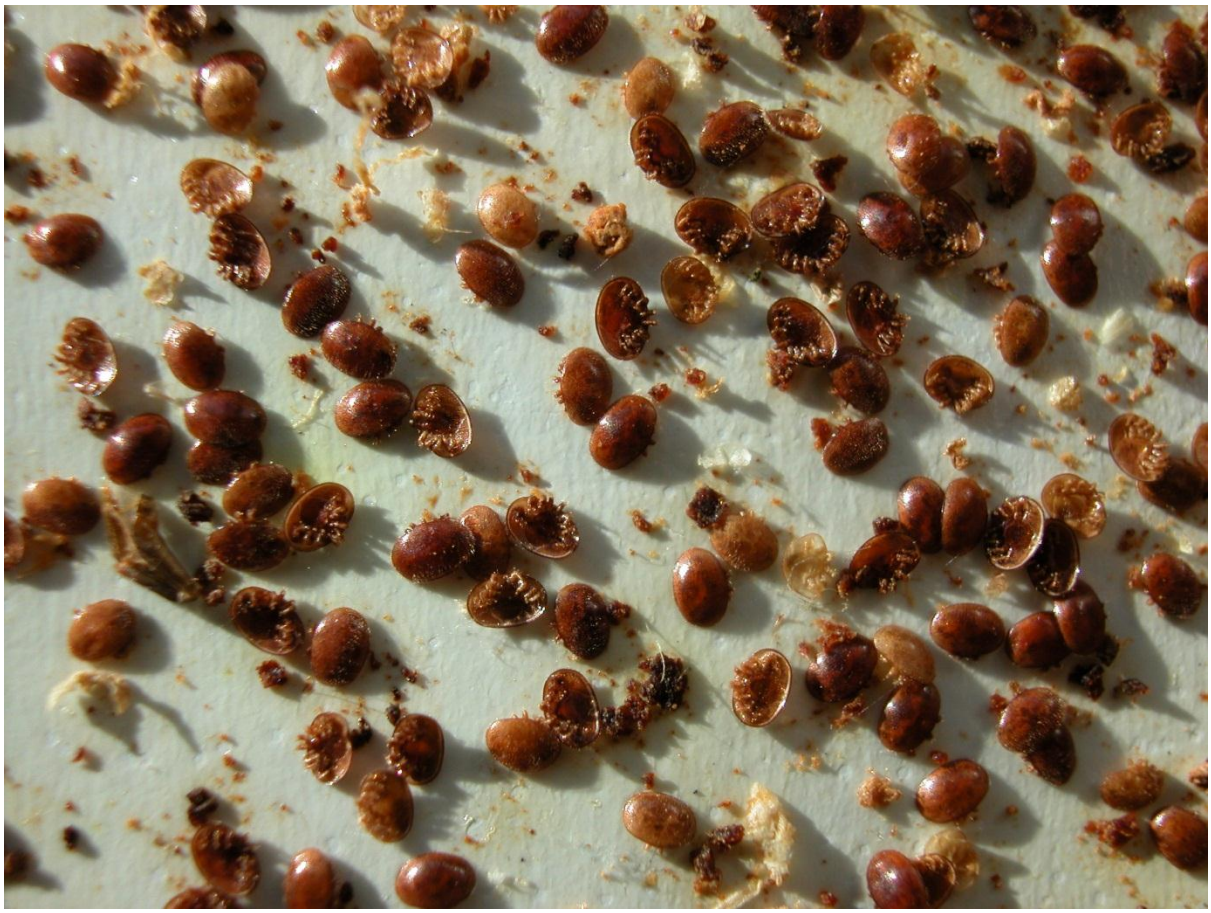
The number of mites recovered from floor debris can give an indication of the mite population. The system is accurate in the winter and summer but during March, April, September and October the results are less accurate.

1) Using an open mesh floor (OMF) or a tray fitted with mesh screen, 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) No treatment or control should be carried out during the sampling period.
5) Collect the debris and count the number of mites+. Divide this figure by the number of days the sample was taken over and you have a daily mite fall figure.
6) 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

National Bee Unit
Food and Environment Research Agency
Sand Hutton, York. YO41 1LZ
Telephone 01904 462510 email nbu@fera.gsi.gov.uk NBU Web site: www.nationalbeeunit.com
May 2013

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

N.b 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.



***Varroa* mite drop from an OMF**

National Bee Unit
Food and Environment Research Agency
Sand Hutton, York. YO41 1LZ
Telephone 01904 462510 email nbu@fera.gsi.gov.uk NBU Web site: www.nationalbeeunit.com
May 2013

Method 2.

Drone Brood Uncapping

1) Select an area of sealed drone brood at an advanced stage, i.e. purple eye 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
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).
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.

Lifting out drone pupae with an uncapping fork.

National Bee Unit
Food and Environment Research Agency
Sand Hutton, York. YO41 1LZ
Telephone 01904 462510 email nbu@fera.gsi.gov.uk NBU Web site: www.nationalbeeunit.com
May 2013

Method 3

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 population levels. 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

National Bee Unit
Food and Environment Research Agency
Sand Hutton, York. YO41 1LZ
Telephone 01904 462510 email nbu@fera.gsi.gov.uk NBU Web site: www.nationalbeeunit.com
May 2013