



## **Treating Varroa using a Varrox and Api-Bioxal (Oxalic Acid Dihydrate based product)**

Following is a simple step-by-step guide to treating Varroa using a Varrox sublimator and Api-Bioxal which is an oxalic acid dihydrate based product.

### **WARNING**

The manufacturer's instructions for both the Varrox (supplied) and the Api-Bioxal product being used **MUST** be read and fully understood before use. Do **NOT** proceed if you are unsure. If you have any questions at all, contact the DSBA Mentoring service via our website. The equipment is only available to competent members and full agreement to the terms is mandatory. A Current DSBA Membership Card must be shown to ensure Varrox training has been carried out and in date.

### In summary

The correct amount of Oxalic acid-based product is put in the Varrox pan, which is then placed in the hive. There are three methods of application which you can choose based on the type of bee hives you own. There are two methods to treat from the bottom of the hive and one from the top of the hive. From below are through the entrance or below the floor via a treatment box (if available), or from above using a treatment box (again if available). The heating action of the Varrox pan causes the oxalic acid to vaporise. The vapour fills the hive and covers the bees and surfaces with a very thin layer of oxalic acid crystals. These fine crystals are tolerated well by the bees, but have a deadly effect on phoretic Varroa mites (up to 97% efficacy). This vapour does not penetrate the wax cappings, hence only phoretic mites are killed. Varroa boards before and after treatment can be used as a guide to the efficacy.

### Preparation

Choose a dry day with little wind, very few bees flying and an air temperature of 5 degrees C or above. The recommended temperature range is 5 to 16 degrees C. Your bees should be broodless or with very low brood count. Fill a bucket with water, light your smoker, dawn your suit, gloves, and mask with suitable filtration against Organic Acids (check filters expiry date!) Eye protection is also recommended. Use as little smoke as possible (if any). Position the smoker in a handy prominent place and it will act as a guide to show where the fumes will be travelling and you should always work UP-WIND of the hive.

### **Keep all non-mask wearing bystanders and pets away and well up-wind from the work area**

#### Step-by-step instructions using a top box or via the entrance in a floor

1. Collate all necessary equipment in a handy location.
2. Load the Varrox pan with 2.3gms (just over ½ a teaspoon) of Api-Bioxal as detailed on packet. This is per colony and not per brood box.

If treating from the entrance

- 2a. Fit a Varroa board and firmly seal any gaps with strips of foam or cloth.

Insert the Varrox through the entrance and position the pan centrally under the bees. Ensure it is level and not close to wax. Ensure any holes in the crown board are covered. Seal any gaps with strips of foam or cloth.

If treating from above using a treatment box

- 2b. Remove the crown board and replace with a treatment box. Fit a Varroa board and seal gaps with foam or cloth. Insert the Varrox into the treatment box. Keep it level. Seal any gaps with foam or cloth, including the hive entrance.

If treating from below using a treatment box

- 2c. Insert lower treatment box in Varroa board gap or lift colony on top of treatment box (dependant on style of lower treatment box being used). Insert the Varrox into the treatment box. Keep it level.



Ensure any holes in the crown board are sealed. Seal any gaps with foam or cloth, including the hive entrance.

3. Attach the battery clips to the charged car battery supplied (12V, 40Ah) with the Red or Positive (+) lead to Battery Positive (+) and Black or Negative (-) lead to Battery Negative (-).
4. Start timer (not supplied) and leave Varrox connected for 3 minutes (unless instructions state otherwise).
5. After 3 minutes, disconnect the battery and leave the Varrox in the hive for a further 15 minutes to allow the treatment to circulate.
6. Remove the Varrox from the hive and cool down the Varrox pan in water. At this point washing out the burnt residue left is required.
8. Remove the treatment box (if used), Varroa board and all foam or cloth seals.
9. Move on to the next hive to be treated. It is recommended that all colonies are treated at the same time.
10. Thoroughly rinse all equipment, foam, cloths, and gloves in water to remove any residue.
11. Update your hive records and record Batch Number and Expiry Date from Api-Bioxal packet.
12. Colonies should only receive one treatment during winter per as per manufacturer instructions.

#### Equipment Required

Supplied by DSBA on production of a valid DSBA Membership Card:

12volt 40Ah fully charged battery  
Varrox Sublimator and Manufacturer's instructions

Member to supply:

Api-Bioxal (Oxalic acid dihydrate type product suitable for sublimating) and measure (not supplied)  
Bee Suit  
Bucket of cold water  
Eye protection recommended if not full face mask  
Gloves  
Mask suitable for organic acid gas with filters in date  
Smoker with fuel and lighter  
Timer  
Treatment Box (Not supplied, however, loan may be possible)  
Varroa Board with various pieces of foam or cloth

Please note that an opened packet of Api-Bioxal can be sealed up and stored for a further 3 months. Timings and application are taken from Api-Bioxal packaging (2021).

As a rough guide and to help order the quantity of treatment required, the following measurements were used when raw Oxalic Acid DiHydrate was utilised:

For single National and Smith size brood box use 2 to 2.5 grams (0.5 teaspoon).

For single Langstroth brood box use 3 grams (0.75 teaspoon).