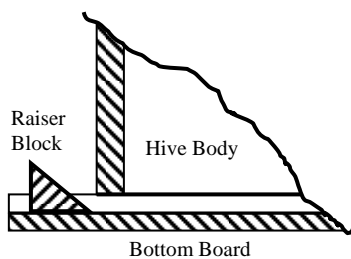


## HIVE & EQUIPMENT

*Corrosion – Tops – Bottoms – Screen Bottoms – Boxes – Pollen Traps – Entrances*

### Preparing the Hives for a Formic Acid Treatment:

Retaining the fumes in the hive is vital to reach 95-100% efficacy. Acid fumes are heavier than air and will sink. It is important to trap fumes at the bottom board so falling mites die in this pool of heavily concentrated fumes.



The section above shows the raiser block forming an inclined entrance and tray with the sealed bottom board. This tray confines the heavy acid fumes in a pool on the bottom board and the bees are forced to ventilate through this pool delivering the fumes to the brood area resulting in a successful treatment. The standard entrance reducer or entrance reduced by foam blocks with a 3-4" gap in the center will do adequately.

Remember the **RULE OF THUMB**: 1½"/4cm opening for every 5 frames of bees.

**FOR 95-100% EFFICACY RESULTS:**

- Bottom boards must be solid and drain-holes must be sealed.
- Top entrances and auger holes must be closed. Use carpets or plastic under wooden inner cover to seal the top.
- Only colonies of the same strength and "housing" can use the same treatment.
- The hive must have enough bees to maintain evaporating temperature and humidity.
- Bees in clusters or four frames of bees in 2 otherwise empty boxes cannot be treated successfully.
- Move weak colonies into singles or nukes.
- **YOU CANNOT TREAT THE BUMERS TWO BOXES OF BEES READY TO SVARM** they ventilate vigorously and will blow all acid out **SPLIT THEM AND TREAT THE SPLITS.**

***These are the experiences we have encountered in New Zealand, Canada, and USA.***

***They are valid for the rest of the world, too.***

### **Corrosion:**

If you treating with formic acid using blast methods or pouches where acid will drip in a liquid form onto metal parts, it will create a rust problem. MiteGone pads do not drip. The fumes contacting and condensating on “unprotected” metals will cause rust. However, most of the metal parts in hives are coated by wax and propolis and that seems to be enough protection from the acid fumes to prevent corrosion. Some of our units go into pollination with metal queen excluders with pads in the top box. No rust had been found because our queen excluders are wax coated from previous use.

***Fumes do not rust wax coated metals.***

### **Wooden Top Inner Covers:**

These are not used in our operation. We use carpets that seal instantly; using a piece of plastic will work just as well to seal the hive from the top. Wooden inner covers never seal instantly but under normal conditions bees will seal them with wax and propolis. However, with a formic acid application, the bees will not seal these gaps and instead use them for ventilation.

After all, bees are like people. Why would you stay in a “stinky” bottom environment if you could let it out through an open window?

***I saw the inside of a metal top cover made rusty entirely from condensation of fumes. This rust is proof that bees ventilate through the cracks between the inner cover and the box rather than sealing them.***

### **The Boxes:**

All auger holes, knotholes, and broken corners will create the same ventilation problems as gaps under a top cover. You have to seal any openings with duct tape, mud, or putty. If you do not plug these holes, you will have to use a higher **daily dose** of acid. Add another pad.

**THE BOTTOM ARRANGEMENT: GETTING TO THE “BOTTOM” OF MOST PROBLEMS:**

### **Pollen Traps:**

In Nelson, we ran into pollen traps. With 1000 hives, removal of pollen traps for the treatment period is not a viable option. We examined the traps and decided that the front of the traps could be duct taped and cracks sealed. The traps were big, the size of a

shallow super; therefore, they will have to be filled with heavy fumes to the entrance and air intake. This will require a much larger daily dose of acid, especially if the traps still leak.

On the other hand, in our tests from 2000 we used our pollen traps deactivated as monitoring screen bottoms with a virtually fully open entrance. Our collecting trays are aluminum and form a pan with a ½” rim. A nice pool of heavy acid for mites to fall in and die, a food tray in your pollen trap may do the same trick as in screen bottom boards. See “Screen Bottoms.”

### **Bottom Boards:**

In the Hamilton area was two yards within a few miles, in the same weather region and hive arrangement. One yard had good treatment and solid plywood bottoms, in the other (LOW treatment yard) we found that “**the solid bottom board**” was made of several straight planks with ¼” gaps between the planks. The fumes leaked through the gaps and killed grass rather than the mites.

*If the grass and plants under your hives are brown and dying, it is a sign of heavy fumes leaking. The fumes exhausted from hives by bees will not cause plants to die.*

### **Entrance:**

For many years we went into pollination in the spring with fully open entrances and had no problems and good treatment. Then we noticed that hives, which had used pollen inserts (same as the riser block we now recommend), have better results and less mites. We ran a few tests and modifications. While the riser block is definitely the best, any reduction of the entrance by the rule of thumb, 1½” or 4cm for every 5 frames of bees, will do fine and improve efficacy.

### **ATTENTION – WARNING:**

The entrance and ventilation must be at the bottom board to allow out-flow of heavy concentration and prevent filling the brood chamber with heavy fumes which may kill colonies, brood, and queens. This happened with the auger hole entrance and the bottom entrance plugged.

#### CONCLUSION:

IF YOU HAVE LEAKING EQUIPMENT AND DO NOT WANT TO FUSS WITH IT, USE ONE MORE PAD TO OFFSET LEAKAGE. MITEGONE IS VERY ADAPTABLE.