

## TREATMENT MODIFICATION AND PRINCIPLES.

Decreasing Evaporation = Increasing the Length of the Treatment.

### **BEFORE ATTEMPTING TO MODIFY YOUR TREATMENT TO SUIT YOUR OPERATION OR DESIRES, REVIEW THE LIMITS OF THE TREATMENT ON THE HOME PAGE AND THE PRINCIPLES OF THE MITEGONE METHOD HERE:**

**MITEGONE TREATMENT IS NOT WEATHER DEPENDANT IF COLONIES ARE KEPT IN HOUSING WHERE BEES CAN KEEP HUMIDITY AND BROOD TEMPERATURE CONSTANT.**

The rate of evaporation is directly related to the size of the evaporating surface. One pad 4'' wide delivers 6 grams of acid per day. A 1''x 3/8'' evaporating surface evaporates 1.5 grams of acid each day. The total amount of acid required to treat a hive is directly related to the size of the hive. The standard Langstroth box and its shorter version like the Dadant or Shallow, when full of drawn comb, all have a relatively similar space between the combs. Therefore, in combination with a standard Langstroth box they are considered to be a standard box for treating with MiteGone. Alone, three Dadant or three Shallows are equivalent to two standard boxes.

AT RECOMMENDED TREATMENT TIMES, 6 GRAMS OF FORMIC ACID IS REQUIRED PER DAY TO TREAT FIVE STANDARD FRAMES OF BEES AND BROOD (OR THE EQUIVALENT). THIS EQUALS ONE PAD.

**IN HOT, DRY, “DESERT” CLIMATES: AVOID TREATING AT HIGH HEAT /LOW HUMIDITY.** At an outside temperature of 100 °F and 20% humidity the bees will evaporate and ventilate acid and water to cool the hive down. The evaporation rate per pad may be up to 25 grams of acid in a 24-hour period. This will not cause damage to the hive but the treatment will only last 10 days. In these conditions, it is important to reduce the evaporating surface area and thus reduce the evaporating rate by one third. Also, at these high temperatures make sure entrances are large enough so hives can ventilate properly.

**IT IS HARD TO OVERDOSE WITH MITEGONE:** In tests, we used eight pads of acid per hive during the summer on a small eight frame colony emitting 48 grams of acid a day. Results showed no damage to the hive. It is a wasteful use of acid.

**COLD AND HUMID CLIMATES ARE NOT A PROBLEM:** MiteGone was designed using the principles of physics. The more the bees heat the air the more they lower the relative humidity. In our tests in the early spring, the outside temperatures were close to freezing and the humidity was at 100%. Inside the hive, it was brood temperature and 55% humidity. The bees actually have to bring in water to keep the hive at 55% humidity for the brood.

**AVOID TREATMENTS IN HONEY FLOW.** Mitegone does not contaminate honey. See: <http://www.mitegone.com/media.asp#success>. But large colonies will blow the acid out and in subtropical climate evaporating nectar into honey can cause 100% humidity inside hive. See below.

**IN HOT HUMID CLIMATES AND OUTSIDE TEMPERATURES ABOVE 30°C 86°F:** The bees are unable to reduce the humidity in the hive. High humidity just changes the evaporation rate of the MiteGone pad.

- At 45%-65% humidity the evaporation rate is 6 grams and does not require adjustment.
- At 85% humidity, the evaporation rate will drop to 3 grams a day. If this is your situation, just install an extra one or two pads in each hive doubling the evaporations rate. Note that you are also doubling your treatment time.
- At 90% humidity and at temperature above 86°F / 30°C evaporation stops.
- At very cold temperatures when bees cluster and stop maintaining temperature and humidity outside the cluster, evaporation also stops.

### WHAT HAPPENS WHEN EVAPORATION STOPS?

When evaporation stops due to temperature and humidity, nothing happens. In effect, your treatment has paused. The acid does not evaporate nor does it get lost. Your treatment is simply on hold. When conditions improve, acid will evaporate at a constant rate and mites will get sick and die. In reality, your treatment can last a month or longer.



### TO REDUCE YOUR EVAPORATION RATE OR EXTEND LENGTH OF TREATMENT:

To modify a MiteGone pad to reduce the amount of acid evaporating, all you have to do is reduce the size of the evaporating surface. Just wrap the pad with plastic tape, covering part of the evaporating surface at the bottom of pad and staple it to the wall of the top box.

Using a variety of widths of plastic tape will allow you to adjust your evaporation rate for your area. From RIGHT to LEFT:

**1) Three-inch Yellow PVC tape** (Uline S-7863). This is not only an easy way to install the pad in: **Baby mating nuks**, but it will reduce the evaporation rate to 1.5 grams a day. Perfect for what is required for mating baby nuks. This adjustment will also extend length of treatment 4 times to **100 days** keeping mites out (beetles and skunks too).

**2) Two-inch Tuck tape** wrapped around the pad reduces evaporation to 3 grams a day but extend the duration of the treatment from 50 days in almond pollination to 60 days. This is just what beekeepers from southern states need. Just prepare your hives at home and get them back mite free. Just put four of these prepared and filled pads in your hives (containing 8-15 frames of bees) before you ship them. This method will also work for Northern beekeepers. Install the pads in the middle of almond pollination and the treatment will last through to the pollination of apples in Washington. This saves you the time and cost of a second treatment and you have mite free hives going into honey production.

**3) One-inch surveyor flagging tape** is an easy way to hang four pads in your hive if you have **Small Hive Beetles**. This adjustment delivers 18 grams of acid for 30-40 days in almond, tree fruit, berry, canola, or vegetable pollination preventing re-infestation.

**4) One-inch surveyor flagging tape wrapped twice.** This is the same adjustment as the two-inch Tuck tape but it is done by wrapping one inch of flag tape around pad twice. It is easier to use than tuck tape and allows for easy reuse of the pads.

I could not find two-inch poly tape without adhesive, and wrapping one-inch tape two or three times can replace all other tapes. Please note that the “tails” of the tape will hang out of the hives making the finding of pads and removing them easy.

**FOR INSTALATION YOU NEED:** Hamer stapler, spare staples, tape dispenser of tape of your choice, cutting edge fasten to stapler, and hive tool.

I will take pictures of installed pads in hives when snow is gone. For now, call me. 1-250-762-8156.