

# HOW WE GOT TO ZERO MITES.

## AUGUST 2006 to APRIL 2010 TESTS EVALUATION LEADING TO EXCLUSIVE USE OF 65% FORMIC ACID & MiteGone<sup>®</sup> TREATMENT & METHOD IN 500 HIVES POLINATION AND BEEBREEDING OPERATION.

### ABSTRACT:

The following is a summary of 3 years of treatments, testing, and decision leading to virtual elimination of mites. 20 hives were selected each August and tested. The same hives were tested in April before treatment using 3-5 day natural drop. All tests were supervised and mites on boards counted by provincial bee inspectors in British Columbia Canada.

In April of 2009 out of 20, two hives had mites one two other one.

IN APRIL OF 2010 ONLY ONE HIVE OUT OF 20 HAD ONE MITE.

### RESEARCH PRINCIPLES ADAPTED AFTER 12 YEARS OF EXPERIENCE IN 2006:

**Only natural drop tests before each treatment** and at the same time of the year (in moderate climate August and April) will tell you the true situation in the hive as mite levels directly effect the winter and summer brood and bee stock.

**The results of testing at other times, by other methods, randomly and after the treatment, are irrelevant.**

**Tests after the treatment;** in many instances, the natural drop after the August treatment was higher than before the treatment. Why is this? It is because mites exposed to the acid continue to die in great numbers long after the treatment has ended. They become sick, sterile and in 80% will not reproduce; their offspring and many adults die in capped cells. Also because summer mites are just dying off in late September and October? **The only true measure of August treatment success is how many mites are in the same hive the following spring and vice versa.**

**2006 August:** Was the last time we used **Fluvalinate** in general population of hives:

Tests proved resistance to Fluvalinate in the mid to high level with efficacy multiple of 2 – 3 – 3.5 - 0.8 and 11 respectively on five hives. THIS IS VERY LOW FOR PESTICIDES.

**The formic acid** efficacy multiple on 2 groups of 5 hives: one treated with 2 pads had an average of 4.5 and 5.0. In five hives, treated with 3 half pads the efficacy multiple average was 15. VERY GOOD.

*Efficacy multiple is: how many times more mites drop in the first day of treatment, over the natural drop before treatment. (See testing on [www.Mitegone.com](http://www.Mitegone.com))*

**The natural 24 hour prorated drop** average before the treatment was 6-7 mites. This is a good result of spring treatment with Formic acid and MITEGONE method.

### DECISION

**The test results lead to an instruction revision to use 3 half pads in August, two in spring, and exclusive use of formic acid and Mitegone pads throughout whole operations becoming standard.**

**2007 April:** 10 Hives treated with acid in august had an average 24 hour drop before treatment of 1.5 mites. 10 hives treated with Fluvallinate in the fall had an average of 17.83 mites, confirming the above decision was correct.

**2007 August:** All hives were treated in the spring with 2 pads of acid and the highest prorated 24 hour drop was 2.28 mites. Four hives out of twenty had 2 mites. The rest of the hives had one or less mites. Two of the hives had zero mites, confirming our **“Decision”** was correct.

AT THIS POINT I HAVE TO PART FROM THE ESTABLISHED PRORATED 24 HOUR DROP, BECAUSE THE DROP NUMBERS DID BECOMING SO LOW; AND 1/3 OR 0.19 OF A MITE MAY CONFUSE SOME READERS.

**2008 April:** The numbers are for a 96 hour, 4 day drop.

The 10 hives treated in the fall with Fluvalinate all had mites; two 1, four 3, one 0, 5, 13, & 20.

The 10 hives treated with acid had 5 hives with 0 mites; 3 with 2, one with 1, and 3 mites.

**This represents a 24 hour average drop of 0.25 mites.**

**2008 August:** The test hives were treated with acid in yards before being brought to the test circle, making testing before treatment redundant.

THE NUMBERS OF MITES ARE GETTING SMALLER. WE SETTLED ON DROPS IN 72 HOURS/ 3 DAYS AND TREATMENTS WITH 65% FORMIC ACID IN MITEGONE 5" PADS METHOD.

**2009 April:** All hives treated in the fall with 3 half pads. **Out of 20 hives, one had 2 mites and a second hive had 1 mite. Rest had zero mites in 3 day drop.**

**2009 August:** All hives treated with 2 half pads in April. **Out of 20 hives, one hive had 6 mites, one 5 one 3 mites, three had 1 mite, and 14 hives had zero mites in a 72 hour, 3 day, drop.**

**2010 April:** All hives treated with 3 half pads in August

**. Out of 20 hives ONE mite was found, and the rest had ZERO mites in a 3 day, 72 hour, drop.**

#### **CONCLUSION:**

**TRANSLATED INTO 24 HOUR PRORATED DROP 0.016 MITES IS "VIRTUALLY ZERO" AND ZERO MITES IS ZERO OF TRANSFER OF OTHER DISEASES BETWEEN THE BEES.**