

VERIFICATION TESTING IS A MUST FOR INFESTATION LEVELS, RESISTANCE & TREATMENT EFFICACY! YOU MUST KNOW WHAT YOU HAVE!

TEST CHART SPRING – APRIL 10-16 2004

Hive Number & Location O = Outside circle I = Inside circle Test for Treatment	Natural Drop Apr 10 (10:30am) to Apr 15 (10:30 am) Total x .2 120Hr 24Hr		Acid Drop Apr 15 (7 pm) to Apr 16 (7 pm) 24Hr		Treatment Efficacy and Resistance Multiple	Hive Evaluation 2 Story Langstroth Frames of brood Frames of bees top box				
	Boost	Strength	↓	↓						
<i>Spring Treatment</i> 2 pads 21 day 12g of acid	O1	6	1.12	2	2	1.66x	(2)	STR	10	7
	O2	8	1.16	6	6	5.45x	(3)	STR	14	8
	O3	2	0.4	2	2	5.00x	(1)	STR	10	6
	O4	11	2.2	11	11	5.00x	nuk	in	-	1
Fall Treatment Apistan 2strips in top box	O5	5	1.0	10	10	10.00x	(4)	STR	12	9
	O6	2	0.4	1	1	2.50x	3	STR	12	8
	O7	2	0.4	4	4	10.00x	(4)	STR	15	9
	O8	10	2.0	4	4	2.00x	(5)	STR	16	10
<i>Average 1.024</i>	O9	8	1.16	3	3	2.58x	(3)	WK	5	3
	O10	2	0.4	11	11	27.50x	4	STR	18	9
Formic Acid 21 days 2 pads 12 gram/day <i>Average – 1.040</i>	I 1	15	3.0	19	19	6.33x	(2)	MED	9	7
	I 2	2	0.4	3	3	7.50x	(4)	WK	3	1
	I 3	4	0.8	5	5	6.25x	(1)	STR	10	6
	I 4	5	1.0	5	5	5.00x	/	MED	9	6
	I 5	0	0	4	4	Inf x	/	STR	10	5
Formic Acid 21 day 3 pads 18 gram / day <i>Average – 0.60</i>	I 6	0	0	1	1	Inf x	/	STR	12	6
	I 7	0	0	4	4	Inf x	3	WK	4	3
	I 8	3	0.6	6	6	10.00x	(2)	STR	12	8
	I 9	3	0.6	4	4	6.66x	1	WK	6	5
	I 10	9	1.8	5	6	2.77x	(1)	STR	13	7

Total Natural Drop ↑ ↑ ↑ ↑ Acid drop interpolated into 24 hours
 Collected for 3 – 5 Days ↑ ↑ Acid drop collected during the
 Natural Drop interpolated ↑ ↑ first 24-48 hours after application
 to 24 Hours ↑ ↑

**TEST THE SAME HIVES IN THE FALL AND SPRING.
WITHOUT TESTING, YOU ARE
PLAYING RUSSIAN ROULETTE!**

MiteGoneTM Enterprises Inc.

VERIFICATION TESTING CHARTS' EVALUATION: **SPRING CHART DATA EVALUATION: SUCCESS OF FALL** **TREATMENT & SELECTION OF SPRING TREATMENT**

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WHAT DO THE 24 HOUR PRORATED NATURAL & ACID DROP TEST TELL YOU?

NATURAL DROP IS COLLECTED ON OVER WINTERED HIVES BEFORE POLLINATION PREPARATIONS:

The natural drop helps you select the treatment you will require.

If you have more than 8 mites natural drop per 24 hour period you are above a negligible infestation level and should select treatment according to the chart in *Verification Testing*.

Generally, our fall treatment worked very well. We know this because our spring natural drop was between 0-3 mites. This is lower than our fall average levels of 0-3.8 mites.

We treated three ways in the fall and then tested these groups in the spring, the results were:

- Apistan treated hives Average 1.024 mites
- Two MiteGone half pads filled with formic acid Average 1.040 mites
- Three MiteGone half pads filled with formic acid Average 0.600 mites

Surprisingly, using three MiteGone half pads filled with acid performed twice as well as the two half pad method and the Apistan groups. However, with such low infestation levels in the first place it is difficult to draw a conclusion. We need to find more mites to test this method.

Please understand that this test is for a commercial operation to verify the success of fall treatment and to select the spring treatment.

EVEN WITH A ZERO INFESTATION LEVEL, A 21-DAY TREATMENT MUST BE USED IN THE SPRING TO ELIMINATE THE TRACHEAL MITE, ELIMINATE POSSIBLE RESISTANCE TO FLUVALINATE, AND TO KEEP MITE LEVELS BELOW THE THRESHOLD OF 8 MITES NATURAL DROP PREVENTING DAMAGE TO WINTER BEES AND ENSURING SUCCESSFULL WINTERING.

ACID DROP AND TREATMENT IS COLLECTED AFTER POLLINATION PREPARATIONS:

All units in the test were equalized as they were being prepared for pollination. Each hive was made into ten frames of bees and five to six frames of brood in the lower box. Each hive had an empty top box to allow for expansion during six weeks of tree fruit pollination. All hives were treated with two pads of acid. An acid drop test was collected in 24 hours and the mite drop ranged anywhere from 1-19 mites per 24 hour period, confirming low infestation in equalized units.

In reading the data, a number in brackets i.e: (2) represents the number of combs of brood taken out of the hive and a number without the bracket represents the number of brood combs added. In the case of an "O-4" hive – a failing queen was replaced by a four frame nuke with an over wintered queen and boosted to full strength.

The efficacy multiple was from 1.6x to 27.5x to infinity. These results are due to a low mite count in the first place; a large amount of brood for mites to hide in, and spring hive management.

UNDER THESE CIRCUMSTANCES, THE FALL INTERPRETATION OF THE EFFICACY MULTIPLE DOES NOT APPLY.

YOU MUST TREAT IN THE SPRING. Mites are protected from the acid in the brood so you must treat using the slow low dose continuous acid release MiteGone method to kill the mites as they emerge from the brood.

EFFICACY OF FORMIC ACID TREATMENT DEPENDS ON THE DELIVERY:

- **Generally** the higher the infestation of mites the stronger or longer the treatments you need. Retest and continue treatments if infestation persists.
- **In short blast methods** (soaked towels, cardboard, napkins, etc) you can increase efficacy by repeating treatment more times (i.e. 7-8 instead of 5 times).
- **In prolonged blast methods** (newspaper pouches, MiteAway, Gel Packs) extra slots / cuts can be made to increase the evaporation rate but generally these methods are not easily adaptable to various hive sizes and conditions. Modifications often shorten the length of treatment.
- **A low dose continuous formic acid application using the Mitegone method** has the advantage of ultimate adaptability. If your acid induced drop is 5 times the natural drop, increase your dosage by 1 pad. If it is 10-20 times, your treatment is working at 75-85% efficacy. You may be happy with these results or you may choose to increase the dosage by 1 pad.

WHAT CAUSES LOW EFFICACY IN ACID TREATMENTS?

The low efficacy is often due to equipment, bees, or temperature and humidity. Often acid is lost and wasted through unsealed holes in the hive body or cracks in the bottom board. Also, some bees may ventilate too vigorously causing the acid to be ventilated out of the hive. Large, strong hives (over 30,000 bees) will require larger amounts of acid. For example; a hive that is twice as strong may require 4 times or more acid. Extremely large strong hives are difficult to treat.

Placement, internal temperature and the humidity of the hive affect the evaporation rate of the applicator. In temperate climates the bees keep constant temperatures and humidity between the combs but not on the bottom board or under the top cover. They have no means of lowering high humidity in a hot climate. This causes a drop in the evaporation rate and can cease evaporation all together.

To offset the internal reduction of evaporation and humidity, simply cut the MiteGone pads into quarters or thirds which will increase the evaporating surface. Recommendation for “Preparing Hives For Treatment” and “Modifying Treatment For Your Conditions” are on our website www.mitegone.com. Print and read our manual (link at the top of the home page).

WHAT ELSE THE 2003 FALL TEST CHART TELLS US:

FORMIC ACID TREATMENTS CAN HAVE 95 – 100% EFFICACY.

- I test for Apistan resistance with statistically corrected (delete low and high) multiple of 30-75. I have no resistance and 95-100% efficacy. I use fluvalinate in the fall as long as it works.
- I will not consider using coumaphos. Organo phosphate residues exclude honey from the health food and European markets and the wax from cosmetic use.
- To prepare for resistance and test fall treatments, I treat one yard of 40 hives with acid each year. In the test hives I apply 2 pads delivering 12 grams of acid per day to 5 hives and 3 pads delivering 18 grams of acid per day to other 5 hives. The chart shows the multiple of both acid groups at the same level and over 20 times, the 2 pad treatment is working well. If the 3 pad treatment delivering 18 grams will have a higher multiple and 2 pads will be below 20 times I am either losing acid and more acid is necessary or evaporation is low and I will modify the treatment accordingly.(see Instructions document)
- The chart also provides a very interesting conclusion. In statistically corrected averages, both acid treatments are in the same efficacy as the Apistan treatment having a 25-75 multiple range.
- **Therefore, efficacy of 95-100% can be achieved with formic acid and the MiteGone method.**

THE BEST PART OF TESTING IS THAT YOU KNOW THE RESULTS OF YOUR PROPOSED TREATMENT BEFORE YOU TREAT YOUR ENTIRE OPERATION AND YOU CAN DECIDE ON THE APPROPRIATE TREATMENT BEFORE YOU SPEND MONEY ON SUPPLIES.

The average handyman can make 24 test boards and screens for less than \$50. Then, just buy a counter for \$2 and glasses for \$15. I sell boards and screens to my neighbours for \$5. You may consider doing the same or spread the word so everyone in your area tests and treats properly. Re-infestation is not as big a problem but if it can be avoided, avoid it by teaching and helping your neighbour.

PLEASE START TESTING! IT WILL SAVE YOU MONEY AND YOUR BEES!