

**BEEVITAL HIVE CLEAN – THE EFFECT ON *Varroa destructor* AND
ON THE COLONIES OF BEES**

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The purpose of the conducted experiments consisted in evaluating on site the effects of the BVHC substance on *Varroa destructor* and on the colonies of bees, depending on the term and frequency of use. The experiment was made in 2008 in the apiary of the Apiculture Section of ISK in Puławy. The experimental families were placed in Dadant hives made of expanded polystyrene with screened bottom boards. Four experimental groups were made out of these colonies.

Group I was represented by colonies of bees on which BVHC was used on three terms: in spring, summer and autumn.

Group II was represented by colonies of bees on which BVHC was used on two terms: in summer and autumn.

Group III was represented by colonies of bees that were smoked three times with Apiwarol, in weekly intervals in two terms: in summer and autumn.

Group IV was a control group (untreated colonies).

The BVHC substance was used on each term according to the recommendations of the producer, meaning that the colonies of bees were treated three times in intervals of 7 days with a quantity of 15-20 ml of substance per colony, repeating twice and three times the intervention.

In total:

- 9 trickling interventions with BVHC were made on group I
- 6 trickling interventions with BVHC were made on group II
- 6 trickling interventions with Apiwarol were made on group III

On groups I and II, control (sticky) papers were placed on the bottom of the hives of half of the colonies (at group I for 4 colonies). The dead parasites and bees on the control papers on the bottom in the spring intervention period were counted three times after 1x 24 hours, 2x 24 hours and 7x 24 hours as of executing each trickling with BVHC. In exchange, in summer and autumn, the bees and parasites were counted four times: after 1x 24 hours, 2x 24 hours, 3 x24 hours and 7x 24 hours. The same measurements were made on the control group, on the same terms. On the duration of the experiment, the power of the colonies and surface with larvae was evaluated, before beginning and after ending each series of interventions. At the time of the finalization of the experiment, the families of bees in all groups were smoked with Apiwarol, at every 4 -6 days until parasites *Varroa destructor* ceased to fall. This fact allowed the determination of the efficacy to destroy the parasites of the used substances.

The efficacy of Apiwarol was of 99.2%, and of the BVHC substance was at group I – 95.8%, and at group II – 98.5%. At the colonies of both of these groups at which control paper was placed an approximately 4% better efficacy was obtained. The natural mortality of the *Varroa destructor* parasites at the control group was of 1.7%. No essential differences were observed between the groups regarding the number of dead bees that fall on the bottom of the hive. Also, there was no influence of the BVHC substance observed on the development and physical conditions of the families of bees. The families in all the groups passed to the winter hive with a similar power (table 2). In order to offer a complete result, we lack the data regarding the physical condition of these families after the winter period.

At the same time, at the experimental groups, where the BVHC substance was applied, as well as the group of families smoked with Apiwarol, most of the parasites fell on the bottom at the third term (in autumn), that is the period when the colonies of bees had no more larvae.

Table 1

The number of *Varroa destructor* parasites that fall on the bottom of the hive depending on the type of concentrate and term and frequency of application

Groups	n	Spring		n	Summer		Autumn		In total			Final treatment		Efficiency %
		average	sum		average	sum	average	sum	n(average)	average	sum	average	sum	
Group I	10	25.9	259	7	23.3	163	280.4	1963	8	298.1	2385	12.1	85	95.8
Group II				6	88.5	531	860.8	5165	6	949.3	5696	14.2	85	98.4
Group III				6	84.7	508	125.5	753	6	210.2	1261	1	6	99.2
Control	4	1.25	5	6	12.2	73	4.7	28	5.33	19.9	106	275	1648	1.7

Table 2

The power/force of the colonies during the entire season on a scale of 1 to 5.

Control terms	BVHC – in spring	BVHC – in summer	Apiwarol	Control
26.02.2008	3.9			3.8
15.04.08	3.9			3.7
31.07.08	3.9	4.4	4.1	4.1
25.08.08	3.7	4.4	4.3	4.3
29.09.09	3.7	3.8	3.8	3.8

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