

STUDY OF THE EFFECTS OF HONEY SUBSTITUTES ON WINTERING AND DEVELOPMENT OF BEE FAMILIES

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Abstract

In beekeeping the honey substitutes usage is the usual procedure, in order to make additions of food for the winter period.

This study wants to bring information on the effects of honey substitutes on the wintering of some families of bees, development of families during the period of spring and of the quantity of brood during the period in the spring .

Key words: bees, a substitute, honey.

INTRODUCTION

The bees must be fed, because beekeepers extract their natural food source – the honey from honeycombs. Taking into account the winters heavy and long enough, it becomes a necessity to supplement feeding bees. In addition to those mentioned must take into account the fact that honey production presents seasonal fluctuations and geographic regions. A permanent question is what to feed the bees, which is the optimal product to be able to enter with powerful families in winter, thus ensuring a successful wintering.

MATERIALS AND METHODS

We used the Dadant hives system 12 frames, mobile bottom without strainer anti-varroa. The experiment took place during the period: fall 2011-spring 2012. Bee families taken into study were at a gathering at the meadow.

During the period 24 July-15 august were taken from sunflowers, then had a picking up maintenance on august 30. During harvest sunflower bee bread formed reserves have been consumed whole fruit – actually found during the extraction of incense.

On September 2, we moved the Apiary on the hearth and we extracted honey from nesting. We spared only frames extraction with larval brood – 3-4/family, we mean tiaras 4-5 kg of honey/family.

On September 7, we started feeding. The control group did not work in the pastoral meadow. Sunflower's caught between July 1st-august 15th (more large fields arranged) then identical conditions, both in terms of maintenance, harvest and lack of bee bread.

Gathered wintering reserves 16-20 kg/family of which we have not really touched. Families blocked at some point have been unlocked. They had a very good condition. They wintered on the honey (mostly by sunflowers).

RESULTS AND DISCUSSIONS

Table 1.

Number of frames with brood and the number of populated frames in the Control group.

L1 (No.) (Control)	Year of the Queen Bee's birthday	Frames with brood at 15- 20 August 2011	Populated frames at 27 February 2012
43	2011	4-5	7
21	2010	7-8	6
62	2011	3-4	6
5	2011	4	7
38	2011	6	7
92	2011	6-7	7
78	2009	6	8
58	2011	5	8
68	2010	5	7

Table 2.

Number of frames with brood and the number of populated frames in the L2.

L2 (No.) (Apiinvert)	Year of the Queen Bee's birthday	Frames with brood at 15- 20 August 2011	Populated frames at 27 February 2012
61	2011	3	5
32	2011	6	6
20	2011	5-6	5
34	2011	4	5
93	2011	5	6
49	2010	7	6
85	2010	6	6
37	2010	8	6

Table 3.

Number of frames with brood and the number of populated frames in the L3.

L3 (No.) (Sugar)	Year of the Queen Bee's birthday	Frames with brood at 15- 20 August 2011	Populated frames at 27 February 2012
52	2011	3-4	6
64	2011	7	6
57	2009	6	7
80	2011	6	6
23	2010	6	7
19	2011	6	7
9	2011	5	7
11	2011	5-6	5

The quantities of honey substitute administered were:

- L2 - 8-12 kg Apiinvert/family.
- L3 - about 8-10 kg of sugar/family – 1,5: 1 syrup (60%), administered in doses of up to 1 litre (750 g of sugar) per day to invert. Families who needed more than 7-8 kg of sugar have received doubled with remnants of honey because it was filed during calendar (passed September 20).

Other feedings (the herd, without differences):

- Apiluk (protein cake) 330 g/family-was made to all families after September 20 to fill the lack of pollen
- protein cake (40% frozen pollen - 60% honey) - 750 g/family – 27 February, when we evaluated and real size of the winter cluster and we noted.

Spring we made measurements of brood (with net) in March 19. Protein cake with pollen was not consumed. First collected by Goat Willow started the March 22-23.

Results on 19 March 2012:

Table 4.

The amount of brood (dm²) and the number of frames populated in the control group.

L1 (No.) (Control)	Year of the Queen Bee's birthday	Brood dm ²	Populated frames
43	2011	22,25	6
21	2010	23	7
62	2011	22,25	6
5	2011	22,25	6
38	2011	23,75	6
92	2011	18,5	6
78	2009	23,25	7
58	2011	28,25	8
68	2010	22,75	7

Table 5.

The amount of brood (dm²) and the number of frames populated in the L2.

L2 (No.) (Apiinvert)	Year of the Queen Bee's birthday	Brood dm ²	Populated frames
61	2011	9,25	4
32	2011	17,25	7
20	2011	17,75	5
34	2011	10	4
93	2011	18,75	6
49	2010	14	6
85	2010	20,25	6
37	2010	14,75	6

Table 6.

The amount of brood (dm²) and the number of frames populated in the L3.

L3 (No.) (Sugar)	Year of the Queen Bee's birthday	Brood dm ²	Populated frames
52	2011	15,25	5
64	2011	11	5
57	2009	16	5
80	2011	17	6
23	2010	15	7
19	2011	18,5	5
9	2011	23	6
11	2011	10,5	4-5

According to the statistical calculation:

- Averages were: L1 - 22.92; L2 - 15.25; L3 - 15.78;
- Standard deviation (reflected the uniformity of the lot): L1 - 2.50; L2 - 4.02; L3 - 4.01 (unusually close together in 2 batches);
- very strong statistical significant differences between the L1 and the one with L2 ($p < 0.0002$), as between the witness and the L3 ($p < 0.0005$) statistically insignificant.

Differences in between batches fed with honey substitutes ($p < 0.7951$)

In terms of the evolution of adult population:

- 5 families in the Control group (L1) (43, 5, 38, 92, 78) lost a frame of adult population, 3 were maintained, and one grew up with a frame (21);
- Group with Apiinvert (L2), from 8 families, 2 families have lost one adult frames (61 and 34), one of which won a frame (32) and the remaining 5 families have been maintained. (the smallest loss of adults);
- Group with sugar (L3), 8 families, 4 lost a population frame (52, 64, 9 and 11), two families have lost 2 frames (57 and 19), and 2 were maintained (the biggest losses).

CONCLUSIONS

The Group with Apiinvert (L2) has had minimal fraying, with processing, and with the growth of brood (less than control group), which had a maximum population.

Group with sugar (L3) showed the strongest signs of wear and tear through depopulation.

Limiting the amount of brood stock from the bastions (a lot joined the fed with corn syrup had an average close to each other, a little over 17

dm²/family) may be due to nutritional deficiency (lack of essential elements of the honey substitute) which may be identical.

After the appearance of pollen and nectar in the nature, the quantities of brood, as usually smooth to all the lots, in turn disappears uniformity and value differences occur in the Queen Bees.

Normally, the lack of bee bread had to be compensated with the pollen given on 27 February. However, those who have limited nutrient deficiency raising brood may have been aggravated by the lack of bee bread throughout the winter, with the replacement of the cumulative natural bee honey.

Production capacity of honey/family, influenced by brood measured during this period extends only up to Acacia. After the appearance of observing nature, families tend to show the true potential of Queen Bees and no longer manifest limitations of nature nourishing. In carrying out the experiment had no chance to measure this potential as there are no to rape and picking at Acacia.

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