Scientific Test Results of **Feedbee®** the Pollen Substitute Diet for Bees in Hungary

Test station :
RESEARCH INSTITUTE FOR ANIMAL BREEDING AND NUTRITION
DEPARTMENT OF BEE-BREEDING AND BEE-BIOLOGY
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Test material: **Feedbee®** natural pollen substitute diet for bees

Test animal: honeybee (*Apis mellifera carnica*)

Test period: 01.02.2008**. –** 31.08.2008.

Preliminary evaluation of the examinations for partial report: 30. 04. 2008.

Preliminary Report

Introduction

The unsettled weather of the past years and especially the droughty summer of 2007 pointed out the possibility that relative or absolute lack of protein can occur in the Hungarian producing apiaries caused by problems in the quantity or quality of pollen. Protein substitute diets which has been developed and tested exclusively for bees can hardly be find on the national market, that is why beekeepers use substitute feeds made for other kind of animals e.g. calf nutritive for pollen supplement. But these feeds frequently contain such components (protein of animal origin, GMO plant materials) that cannot be advised for usage in beekeeping.

Research Institute for Animal Breeding and Nutrition, Department of Honeybee Breeding and Biology (Gödöllő) was requested by Vernalis Bt. in January of 2008. to test a natural supplementary bee feed named **Feedbee®**. According to the documentation supplied by Canadian researchers (Saffari et al., 2006, Saffari et al, 2008) the feed is composed by natural grist of different cereals, vitamins and minerals not containing either soybean or proteins of animal origin.

Materials and Methods:

Test feed was given to bees originally in the forms of thick patty and thick syrup mix then in a thinner syrup mix. Later on – after previous agreement – we made thick patty with icing sugar for research purposes.

We tested the feeding on three types of hives and frames on three premises (1. Research institute - 4x7=28 colonies, 2. Apiary 18 colonies, 3. Apiary – 5 colonies/ without control). We examined the intensity of feeding; we followed the development of bee-stock and bee colony groups. We estimated the daily egg-laying ability of the queen through measuring the brood. (Örösi Pál Z, 1968).

Results:

Stimulating feeding of bee colonies in the Spring:

- In the case of the thick patty made on the basis of the original recipe, although the inner part remained soft, its surface stiffened because of the slower consumption and the bees were not so willing to eat it.

1. Picture
Consumption of the thicker patty in the first days.

- Bees consumed the thin syrup quickly, usually in 1-2 weeks, which meant as well only a minimal loss of the feed. Where the consumption was slower there the settling of the feed could be seen on the bottom of the bottle.

2. Picture
The Feedbee® thin syrup is utilized well by the weaker colonies as well.

- In case of patty made with icing sugar (1 kg icing sugar+1,5 kg **Feedbee®** + 75% syrup) the colonies generally consumed 30-40% of the amount they got (750 g- 1000 g) per colony in roughly two weeks. The sugar patty remained soft and easily absorbable for a long time.

3. Picture
FeedBee with icing sugar and with liquid-supply given to an experimental colony

- For the protein analyses bee samples were collected from the experimental colonies at the beginning of the research and two weeks later (Otis et al, 2004). We stored the samples at -70 ˚C until analyzed.

Development of bee colonies

With the exception of some colonies, the population of colonies (and their brood) was higher than in the control groups in result of the successfully used feeding (sugar patty form).

In case of the **1. research field apiary** the results of the brood measurement show well that the number of population and the brood is remarkably higher in the colony-groups which consumed **Feedbee®**.

Summary results in the 1. research apiary
Type of hive: 1/2 nB

Form of feeding	Start of feeding	General consumption	Starting general population (comb street)	Population on 9. May (comb street)	Brood on 9. May (number of combs)	Performance of the queen (pieces)
Feedbee patty with icing sugar	**21.03.2008.**	**1286 g Feedbee**	**4**	**20,7**	**16,0**	**1371,6**
Sugar syrup (control)	**01.03.2008.**	**1875 g sugar**	**4,4**	**15**	**9,7**	**949,7**

In the **2. apiary** there was also a difference between the research group and the control group.

Summary results in the 2. research apiary
Type of hive: big Boczonádi

Form of feeding	Start of feeding	General consumption	Starting general population (comb street)	Population on 9. May (comb street)	Brood on 9. May (number of combs)
Feedbee patty with icing sugar	**27.03.2008.**	**700 g Feedbee**	**3,9**	**11,7**	**7,4**
Sugar patty (control)	**21.03.2008.**	**1500 g sugar**	**3,9**	**9**	**5,9**

In the **3. apiary** the population exceeded the needs of the colony and they were preparing for swarming and because of overpopulation an early division of the colonies became necessary.

Summary results in the 2. research apiary
Type of hive: Hunor (1/2nB honey area)

Form of feeding	Start of feeding	General consumption	Starting general population (comb street)	Population on 9. May (comb street)	Brood on 9. May (number of combs)
Feedbee patty with icing sugar	**17.03.2008.**	**1200 g Feedbee**	**6,8**	**21,4**	**12,8**

There were no control groups.

Comments and remarks:

In case of the syrup formulation the consumption is quicker that is why the settled, unutilised material is minimal. In case of this feeding method the outer temperature must be above 10 ˚C, or the bees should be treated very carefully.

The several possible way of feeding the diet gives the beekeepers many choices during the spring preparation of the colonies even in different weather conditions.

Our research colonies wintered relatively weakly and they started the year with difficulties but in contrary to these facts, the colonies that remained in the research developed well for the beginning of the carrying. Although, the starting rich pollen pasture surely helps the quick recovery of bee colonies, but in case of temporary hindered flying periods **Feedbee®** can compensate the possible lack of feed with success. With its continuous presence at spring it stimulates the queen and her egg- laying will be continuous.

References:

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3. Saffari, A. M., Kevan, P. G., Atkinson, J. K.: Feeding colonies with a nutritious pollen supplement is beneficial. Bee Culture, 2006. 134. 30-31.
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15. May. 2008. Gödöllő.

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