

INFLUENCE OF SPRING FEED ON THE STRENGTH OF HONEY BEE COLONIES DURING SPRING DEVELOPMENT

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Original scientific paper

Abstract: The strength of honey bee colonies during year depends on wintering and on biologic development of colonies during spring period. To ensure satisfactory colony development in spring period, it is necessary to add stimulative feed. The aim of this study is to determine the effect of different types of spring feed on the honey bee colony strength. Twenty honey bee colonies were selected for this experiment. Colonies were divided into five groups, and each group received different stimulative feed. The first group was fed with sugar syrup, and the second with sugar syrup with added microelements and with vitamin complex. The third group received sugar candy without additives, and the fourth group received sugar candy with addition of microelements and vitamins. The fifth group was fed with honey. The experiment was conducted on the apiary of the Institute for forage crops in Kruševac.

Key words: honey bee, spring development, stimulative feed

Introduction

The main food for honey bees (*Apis mellifera* L.) are pollen and honey. Pollen represents the main source of protein, fat, vitamins and minerals in the honeybee diet. On the other hand, honey is rich in carbohydrates (fructose and glucose).

Spring development is very important aspect of honey bee activity. To reach full potential for honey production, colonies must produce large number of young workers. To accomplish this, it is necessary to add nutrients to stimulate development of young worker bees as many studies show that pollen is necessary for full development of hypopharyngeal glands in young bees. These glands secrete jelly and royal jelly required by honeybee larvae (Maurizio, 1950; Standifer et al., 1960). This indirect relationship of pollen-derived nutrients to larval development

has been demonstrated by many investigators over the past 40 years (*Langer, 1931; Haydak, 1970; Dietz, 1975*).

Materials and Methods

The experiment was conducted in the apiary of Institute for forage crops in Mačkovac, Kruševac. The selected colonies were of the similar strength and food supply. Twenty honey bee colonies were used for this experiment. Selected colonies were divided into five groups. To each group were given different stimulative feed:

Group 1 – sugar syrup consisting of equal ratio of edible sugar (sucrose) and water,

Group 2 – sugar syrup of same composition as above but with added microelements (Oligovit pills),

Group 3 – sugar candy, prepared by standard recipe for this type of solid honey bee feed,

Group 4 – Sugar candy with the addition of microelements and vitamins (Forsapin),

Group 5 – honey.

Following parameters were studied: the amount of bees, the amount of brood, the amount of honey and the amount of pollen. The studied traits were assessed by standard grade system used in beekeeping.

The experiment lasted from April 2011 to May 2011.

Results and Discussion

All groups showed accelerated development, which is common when the stimulative feed is applied (table 1 and 2).

The first group showed the increase of 96.38% in the amount of bees, 65.51% in the amount of brood, 18.94% for the amount of honey and 44.25% for the amount of pollen.

Group 2 had similar trend, where all studied traits, also, showed increase. Here the increase was as following: 77.47% for the amount of bees, 71.67% for the amount of brood, 17.22% for the amount of honey and 65.42% for the amount of pollen.

In the third group, increase in all values for studied traits was, also, determined. Here the results were as following: 67.59% for the amount of bees, 68.48% for the amount of brood, 6.97% for the amount of honey and 30.08% for the amount of pollen.

As with previous, the fourth group similar results, as all values increased: 71.13% for the amount of bees, 86.29% for the amount of brood, 17.39% for the amount of honey and 51.55% for the amount of pollen.

The values for studied traits in the fifth group also showed increase: 64.02% for the amount of bees, 76.05% for the amount of brood, 16.10% for the amount of honey and 20.98% for the amount of pollen.

Table 1. The average values for studied traits by groups at the beginning of the experiment

Group	Amount of bees	Amount of brood	Amount of honey	Amount of pollen
1	4,70	2,90	2,27	1,13
2	5,37	2,93	2,73	1,07
3	5,03	2,57	3,30	1,23
4	5,30	2,70	2,07	0,97
5	5,67	2,63	2,67	1,43

Table 2. The average values for studied traits by groups at the end of the experiment

Group	Amount of bees	Amount of brood	Amount of honey	Amount of pollen
1	9,23	4,80	2,70	1,63
2	9,53	5,03	3,20	1,77
3	8,43	4,33	3,53	1,60
4	9,07	5,03	2,43	1,47
5	9,30	4,63	3,10	1,73

The highest increase in the amount of honey bees per colony was determined in the first group which was fed only with sugar syrup. The development of the brood was most increased in the group 5 which was fed with honey. The differences in the amount of honey per colony were somewhat similar in all groups (except in the group 3). Higher differences can be seen in the amount of pollen, which can be explained by the differences in foraging urge between colonies.

Conclusion

According to the collected data from this experiment it can be concluded that the stimulative feed in the spring is very important factor in the honey bee colony development. The addition of vitamins and minerals have increased the development of the colonies, but the most developed colonies were ones which received pure honey and sucrose syrup, meaning that these types of honey bee feed contain enough matter for normal colony development.

Uticaj načina prolećne prihrane na snagu pčelinjih društava tokom prolećnog razvoja

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Rezime

Snaga pčelinjih društava u toku godine zavisi od samog prezimljavanja, kao i od biološkog razvoja društava u toku prolećnog perioda. Da bi se osigurao zadovoljavajući razvoj društava u prolećnom periodu, neophodno je vršiti stimulativnu prihranu pčelinjih društava.

Cilj rada je da se utvrdi efekat različitih načina prolećne prihrane na snagu pčelinjih društava.

Za ogled je odabrano 20 pčelinjih društava koja su podeljena u pet grupa i svakoj grupi je dodavana određena stimulativna prihrana. Prva grupa je prihranjivana šećernim sirupom, a druga grupa šećernim sirupom obogaćenim mikroelementima i vitaminskim kompleksom. Treća grupa je dobijala šećerne pogače bez dodataka, dok su četvrtoj grupi dodavane šećerne pogače obogaćene proteinima. Peta grupa je prihranjivana medom. Ogled je izvršen na pčelinjaku Instituta za krmno bilje u Kruševcu.

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Received 30 June 2011; accepted for publication 15 August 2011