

COMPARATIVE ASPECTS REGARDING SOME METHODS OF ADMINISTRATION FEEDING WITH SYRUP IN BEE FARMS

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Abstract

The present trend nationally and worldwide of beekeeping is the intensification of activities by increasing the number of families exploited by a beekeeper. This is possible by reducing working time required for operations and through a series of measures and modern methods of maintenance. One of these operations which requires a large amount of time and work is stimulating feeding or supplementing with syrup of bee families. In order to increase labor productivity was made a system of administration the feeding syrup of bee families removing all physical work of beekeeper and reducing the administration time of syrup about 50 times compared with classical administration which is practiced in most apiaries. The investigation was made on 2 groups (apiaries) of 300 beehives. In the first apiary administration of syrup was made classic, and on the second apiary, administration was performed using a special system, during which time of administration have noted resulting, special advantages syrup administration system.

Key words: feeding stimulation, syrup, bees, apiary

INTRODUCTION

In the scientific literature it is mentioned that a beekeeper which uses conventional mining techniques and methods in beekeeping can support a total of 100.4 beehives [1].

The current trend of national and international beekeeping is the intensification of work both by increasing the number of families exploited by a beekeeper and the quantity and quality of the products obtained.

Increasing the number of bee families exploited by beekeeper can be achieved by reducing working time required for operations and a series of measures and modern methods of operation including: system load pallets of hives, rapid and efficient administration of treatments, controlled and centralized management of feeding, using modern facilities honey extraction, etc.

Feeding stimulation or additions are operations that require a large amount of time and work.

Feeding role is to fill the lack of stimulation harvest from nature to ensure continuity deposit queen clutch mass, respectively development of bee families [5].

Stimulation can be done with energetic food, protein and energy-protein[2].

Feeding energetic incentive based syrup can be done in several ways but the most common is by taking in sugar syrup feeders concentration of 1: 1, in doses of 300-500 ml every 2-3 days the bees begin to transport syrup in the nest, and by inversion, triggers a strong stimulating action family, the effect on the intensity of growth of juveniles[3].

It can also manage nutritious syrup in place or after diaphragm, directly in the middle of the nest. Procedure can be applied in 1000 ml doses at intervals of 1-2 days, depending on the development of bee families and food supply in the family nest [4].

MATERIAL AND METHOD

Our research was conducted on an effective of 600 families Carpathian bee *Apis mellifera* (bee Carpathian) Moldavian Plateau ecotype divided into two batches of 300

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families located in the hearth different distances above 10 km, all located in the area conditions bioapicole the Moldavian Plateau.

Using a stopwatch times were registered administration of sugar syrup on sections and whole apiary hives resulting in a more precise picture of parameters of syrup feeding administration. Investigations were conducted between April 4 to 12, resulting in feeding stimulation with 0.5 l / hive prior to harvest acacia then repeated from 18 to 31 August of the same year 2011 the quantity completing similar feeding 1 l / hive administration.

For apiary 1 of Tanacu stationary was administered to stimulate feeding (syrup) in the classic version found in most apiaries in Romania using the following which were timed:

- transportation syrup in close proximity to the apiary;
- unloading syrup from the main tank into measuring and managing syrup, in our case using a stainless steel container with volume of 500 ml or 1000 ml;
- removing the beehive;
- raising the cap and manage the amount of syrup and 500 ml for feeding spring and 1000 ml in autumn feeding;
- repositioning the cap;
- placing beehive cover;

For apiary 2 of Știoborăni stationary was divided into 6 sections apiary of 50 hives each, making a centralized management system of stimulation with syrup comprising:

- main tank (capacity 1000 l);
- general tank tap;
- pump for viscous fluids (1.5 bar);
- main pipe;
- secondary Taps;
- 6 Secondary ducts;
- flow control nozzles;

Description the functioning of the stimulating administration system with syrup

Main tank in which the syrup is linked to the main pipe, which feeds six secondary

pipes. Between the main tank and main pipe is mounted main control tap flow.

Immediately after the main tap is mounted a pump putting constant pressure manometer syrup fitted with pressure control, is connected to the main pipe.

The role of general tap is to regulate the flow in tap pump during recession of syrup in main tank, depending on the pump manometer display.

Role of the pump is to distribute the syrup with a flow and constant pressure in the main network. Of principal mains is powered six secondary pipeline between which is located one secondary tap that is designed to regulate the flow of syrup on each section differently depending on desired needs.

From the secondary network is powered each hive through the individual pipelines at the end of is located a nozzle volume control located in feed beehive.

The role of these control nozzles is to allow the dosage of the amount of syrup according to requirements simultaneously in all hives.

RESULTS AND DISCUSSIONS

For each of the 2 stationary apiary Tanacu respectively Știoborăni were used 2 different feeds, stimulating in spring (500 ml) and completion in autumn (1000 ml).

In the spring season were performed seven administration of 500 ml, and in autumn were carried also seven completing administrations, this time of 1000 ml each.

In the apiary 1, located in stationary Tanacu the spring feeding version was administered amount of 500 ml of syrup per hive, the total time required to manage the entire amount of syrup during the 7 administration was 1054 minutes, about 17, 5 hours.

These data shows total time management with a minimum of 148 minutes and a maximum of 154 minutes per administration (table 1).

Table 1 Register for spring feeding times with 0.5 l syrup / hive

| Section beehives | 1 -50 | | 51 -100 | | 101 -150 | | 151 - 200 | | 201 - 250 | | 251 - 300 | | Total feeding time by administration (minutes) |
|-------------------------------------|---------|---------|---------|---------|----------|---------|-----------|---------|-----------|---------|-----------|---------|--|
| | beehive | section | beehive | section | beehive | section | beehive | section | beehive | section | beehive | section | |
| Feeding 1 | 0.31 | 15.5 | 0.46 | 23 | 0.51 | 25.5 | 0.55 | 27.5 | 0.56 | 28 | 1.00 | 30 | 149.5 |
| Feeding 2 | 0.32 | 16 | 0.47 | 23.5 | 0.52 | 26 | 0.54 | 27 | 0.55 | 27.5 | 1.01 | 30.5 | 150.5 |
| Feeding 3 | 0.30 | 15 | 0.45 | 22.5 | 0.50 | 25 | 0.54 | 27 | 0.56 | 28 | 1.01 | 30.5 | 148 |
| Feeding 4 | 0.32 | 16 | 0.47 | 23.5 | 0.50 | 25 | 0.53 | 26.5 | 0.55 | 27.5 | 1.0 | 30 | 148.5 |
| Feeding 5 | 0.30 | 15 | 0.45 | 22.5 | 0.53 | 26.5 | 0.56 | 28 | 0.57 | 28.5 | 1.01 | 30.5 | 151 |
| Feeding 6 | 0.33 | 16.5 | 0.48 | 24 | 0.53 | 26.5 | 0.58 | 29 | 0.56 | 28 | 1.0 | 30 | 154 |
| Feeding 7 | 0.32 | 16 | 0.48 | 24 | 0.52 | 26 | 0.57 | 28.5 | 0.57 | 28.5 | 0.59 | 29.5 | 152.5 |
| Media | 0.314 | 16.11 | 0.47 | 23.28 | 0.516 | 26.18 | 0.55 | 28.04 | 0.56 | 28 | 1.02 | 30.14 | |
| Total time administration (minutes) | | | | | | | | | | | | | 1054 |

Also in apiary 1, located in stationary Tanacu, the feeding option of filling in the autumn, was given amount of 1000 ml of syrup per hive, the total time required to manage the entire amount of syrup during the 7 administration was 1103.5 minutes, approximately 18.4 hours (table 2).

From this table, the total management between minimum and maximum 155.5

minutes to 161 minutes per administration (table 2).

In the apiary 2, the time required amount of syrup administration in stimulating feeding in spring version (500 ml / hive) was the whole apiary connected to the system for 3 minutes.

Table 2 Register for autumn feeding times with 1 l syrup/hive

| Section beehives | 1 -50 | | 51 -100 | | 101 -150 | | 151 - 200 | | 201 - 250 | | 251 - 300 | | Total feeding time by administration (minutes) |
|-------------------------------------|---------|---------|---------|---------|----------|---------|-----------|---------|-----------|---------|-----------|---------|--|
| | beehive | section | beehive | section | beehive | section | beehive | section | beehive | section | beehive | section | |
| Feeding 1 | 0.33 | 16.5 | 0.48 | 24 | 0.54 | 27 | 0.57 | 28.5 | 0.59 | 29.5 | 1.02 | 31 | 156.5 |
| Feeding 2 | 0.35 | 17.5 | 0.49 | 24.5 | 0.54 | 27 | 0.56 | 28 | 0.58 | 29 | 1.03 | 31.5 | 157.5 |
| Feeding 3 | 0.32 | 16 | 0.48 | 24 | 0.52 | 26 | 0.57 | 28.5 | 0.58 | 29 | 1.04 | 32 | 155.5 |
| Feeding 4 | 0.34 | 17 | 0.49 | 24.5 | 0.53 | 26.5 | 0.55 | 27.5 | 0.57 | 28.5 | 1.03 | 31.5 | 155.5 |
| Feeding 5 | 0.33 | 16.5 | 0.48 | 24 | 0.55 | 27.5 | 0.57 | 28.5 | 0.59 | 29.5 | 1.03 | 31.5 | 157.5 |
| Feeding 6 | 0.35 | 17.5 | 0.51 | 25.5 | 0.55 | 27.5 | 1.0 | 30 | 0.59 | 29.5 | 1.02 | 31 | 161 |
| Feeding 7 | 0.35 | 17.5 | 0.50 | 25 | 0.55 | 27.5 | 0.59 | 29.5 | 0.59 | 29.5 | 1.02 | 31 | 160 |
| Media | 0.34 | 17.33 | 0.49 | 24.5 | 0.54 | 27 | 0.57 | 29.04 | 0.58 | 29.21 | 1.027 | 31.36 | |
| Total time administration (minutes) | | | | | | | | | | | | | 1103.5 |

In the variant feeding completing in the autumn, the amount of syrup administered was 1000 ml / hive the time of administration of all of the syrup for the whole apiary was 5 minutes without additional intervention in the the system.

Supplementary in the case of apiary 2 compared to apiary 1 were required for 2.5 hours granting that were installed and

adjusted installation and dismantling to travel in the pastoral need about 30 minutes

From figure no. 1 it is noted that both the administration as well as the spring and autumn, the time of administration for each hive and for each section increases from administration to another, induced by operator fatigue caused by exercise.

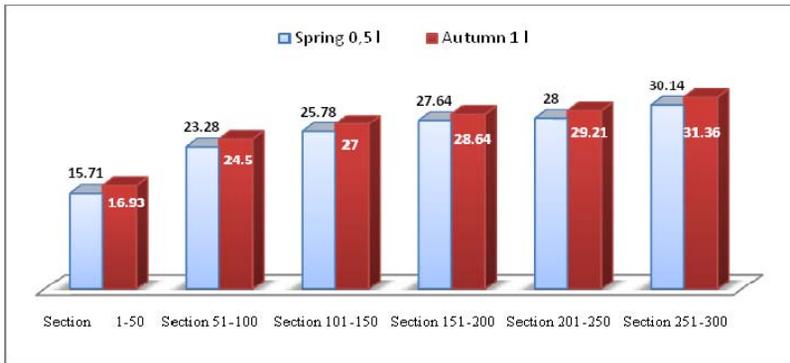


Fig. 1 Average time of administration on section

For example, the time required for syrup administration in the spring version is between 0.314 minutes per hive or 16.11 minutes for each section in the first section.

In the case of the last section, time management for each hive increases to 1.02 minutes and 30.14 minutes for the entire section.

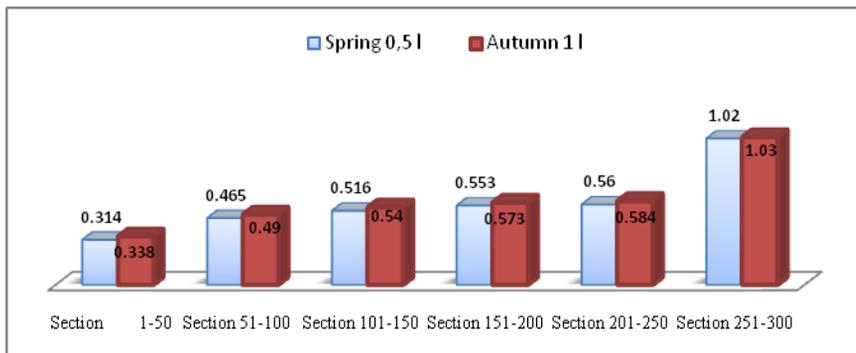


Fig. 2 Average time of administration on hive

The same trend is also observed in the autumn version where the operator began administration of syrup per hive in an average

time of 0.338 minutes, reaching as hives last section, the average administration is approximately double of 1.027 minutes / hive.

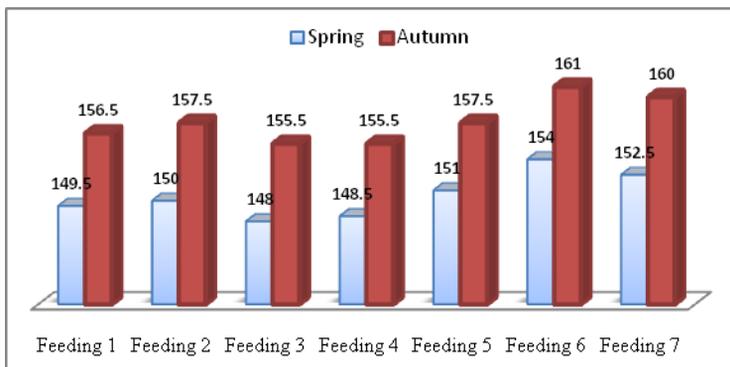


Fig. 3 Total time on feeding administration

Figure no. 2 shows that the total time increase from a feeding management to another, starting from 149.5 minutes for the first spring feeding to 152.5 minutes respectively from 156.5 minutes to 160 minutes for the autumn version.

The data obtained during the experience, we can compare management times for the 2 experimental groups respectively classical version, apiary located in stationary Tanacu and modern version, apiary located in the stationary Știoborăni where we used system centralized of administration the syrup.

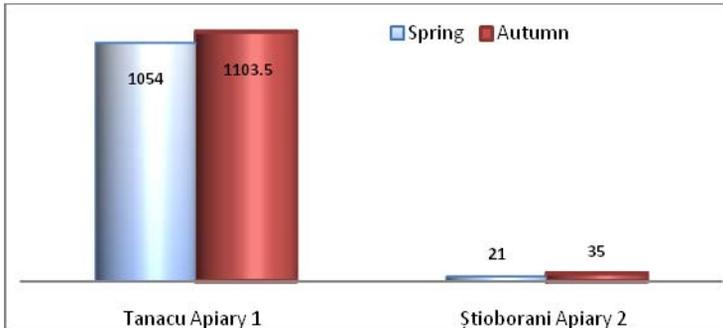


Fig. 4 Total time administration on apiaries

Therefore in Fig. 3 we see that in the classical variant the time required cycle administration of the entire quantity was 1054 minutes for version 1103.5 minutes in the spring and the autumn variant compared to the modern version where I needed 21 minutes for spring administration and 35 minutes of the administration of autumn, hence the following advantages:

- it is an excellent system to stimulate bee families or for filling food reserves during autumn;
- beekeeper can thus feed their families within a predetermined time at any hour of the day, without being conditioned by sunset;
- system works under controlled pressure so that, while each hive can get the same amount of syrup;
- we can feed comfortably without opening the hive and thus effectively prevent the hive temperature decrease;
- spring is possible early feeding safer inside the hive;
- we feed the bees even with a minimal amount of syrup (100 ml) as the beginning stimulation or during habituation is very great;
- We can stimulate continuous and uninterrupted hives with small amounts of syrup which is of particular importance

during the summer unproductive picking there because the queen will lay eggs without interruption maintenance family bee keeping power resulting families strong in the all seasons;

- in spring and autumn Feeding the robbing should be avoided as it flows because it is not flow any drop of syrup can cause robbing;
- even thicker syrup with a sugar content higher 2:1 can be easily pumped through the system. The system is easily adapted to any model or type of hive
- maintenance and cleaning system is simple and requires no special effort;
- the system is mobile and can be placed anywhere we have a source of 220V and a generator;
- the system is versatile and can be scaled to the size of the apiary then, as far as increasing the number of families;
- reduced time and effort;
- accuracy of administration;

CONCLUSIONS

In apiary 1 total number of hours required to manage all of the syrup in stimulating and completion feeding needed throughout the year was 70 hours.

In the apiary 2, the time required was 21 minutes (7 administration of 3 min) in the spring season when were administered 500 ml of syrup per hive, and when received 1000 ml the time required was 35 min (7 administration of 5 min) totaling 56 min (35 min+21 min) to which we add the 2.5 hours to install the system and 30 minutes to disassemble the system, resulting in about six hours compared to 70 hours in the classic version. For apiary 2 has not been taken into account as operator effort exercise for administration of syrup, resumed only at the touch of a switch and supervision manometer pump, which is located on the same panel.

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