

N. Azizova is an independent researcher at Bukhara State University
O. Mahmadiyarov is an independent researcher at the Samarkand Institute
of Veterinary Medicine

O. Turaev, Ph.D., Head of Beekeeping Laboratory

THE EFFECTS OF NATURAL AND MINERAL FEEDS ON EGG PRODUCTION OF QUEEN BEE

N. Azizova, O. Mahmadiyarov, O. Turaev

Abstract: This article explores the effects of natural and mineral feeds on egg production and weight of queen bee. As natural feed for the control group, 50% sugar syrup was used. For the first experimental group, 50% sugar syrup + germinated wheat syrup, and for the second group 50% syrup multimaks mineral supplement.

Keywords: Queen bee, mineral supplements, germinated wheat, multimaks.

Relevance of the topic: The unique natural climatic conditions of the Republic of Uzbekistan are favorable for feeding bee families on the basis of high technology.

It is necessary to increase the volume of beekeeping and processing of beekeeping products in the country, the introduction of modern advanced technological methods of production, in particular, the centralized organization of production of artificial feed for bees and the strengthening of the beekeeping feed base. However, in recent years, due to chronic sugar beet feeding in the Republic, due to the lack of vitamins, fats, carbohydrates, amino acids, micro and macronutrients in such feeds, attention is not paid to feeding bees with quality feed in the spring. As a result, the productivity of the bee family is declining. This requires the use of natural and mineral nutrients in the bee colony and feeding with micronutrient-rich preparations in order to increase the oviposition of queens.

Scientists have shown ways to increase the productivity of the bee family and the daily egg-laying of queen bees by feeding the bee family with various premixes and natural nutrients, and their prospects, [1.2] they also showed ways to pay special attention to the correct assessment of the effect of feeding queen bees on the productivity of honey and beeswax in the family, the wintering of the bee family, as well as the composition of honey quality to properly organize the feeding process [3.6].

In order to increase the daily egg production of queen bees in Uzbekistan, in research on the effective use of natural and mineral nutrients, improving the productivity of bee colonies (honey, beeswax, pollen) and other important indicators the advantages of using "Multimax" premix and germinated wheat syrup (sumalak) have been shown. [4.5]

The aim of the study: To study the effect of natural and mineral nutrients on the weight of queen bees and their ovulation in Uzbekistan, its impacts on the daily egg laying and live weight of queen bees.

The source and method of the research. In ensuring the quality of the bee family changes, the role of the mother bee and its oviposition is incomparable, and is of great importance for the quality growth and development of the bee family. For this purpose, in order to further develop the bee families in the local population, for the first experimental group, in the spring, for two months, 50% sugar syrup containing 1.0% "Multimax" premix is given, and in for the second experimental group was given 10 liters of sugar syrup with 1 liter of germinated wheat syrup (sumalak) addition. The bee families in the control group were given only 50% sugar syrup. Bee families were selected on the basis of similarity, and indicators such as family strength, age of queens, amount and system of nutrients in the hive, and absence of bee diseases were determined. In the experimental and control groups, 10 bee families were selected on the basis of similarity. The daily ovulation of queen bees was studied in the period from February to May. The frame-grid tool was used, the size of the cells in the frame-grid was 5x5 cm, and in each cell there were 100 bee colonies.

The experiments were conducted at the beekeeping farm "Saidov Samad Sanaevich" in Vopkent district of Bukhara region. There are 250 bee families on the farm, which belong to local bees.

Research results and their analysis. Biotechnological data on the daily egg laying of queens using different feeds are given in Table 1 below.

In artificial insemination of mother bees, we used new innovative methods of feeding, using various biotechnological methods for feeding larvae.

In beekeeping, the use of various biologically active nutrients in the reception, rearing and development of larvae for the purpose of artificial breeding of mother bees is becoming more widespread. One of the most pressing issues in Uzbekistan today is the study of the daily egg-laying of queen bees in local bee families and the introduction of artificial breeding of many queens.

Our initial data on daily egg laying of queen bees in bee families are reflected in Table 1.

Data on the daily egg-laying rate of queen bees are given in Table 1 below.

Table 1
Daily egg-laying rate of queen bees (in pieces)

Date of observation	n	Lim	$X \pm S_x$	Cv, %
28.02.2018	10	441-836	$638,3 \pm 9,1$	4,51

11.03.2018	10	559-1309	934,2±8,4	25,40
23.03.2018	10	755-1376	1065,5±80,8	24,0
04.04.2018	10	1211-1760	1489,2±29,5	3,01
16.04.2018	10	1540-1940	1738,3±30,9	3,21
28.04.2018	10	1569-2055	1811,6±48,5	4,31
10.05.2018	10	1804-2151	1977,5±64,4	3,30
22.05.2018	10	1914-2369	2134,2±70,1	4,16

The analysis of Table 1 shows that the daily laying of eggs by queen bees initially occurred in the same texture as the daily laying of eggs by queens in the local population. The rate of daily laying of queen bees in the local population, even in all weather conditions, has changed since early spring.

In bee families, initially on February 28, its egg-laying was 638.3, in March it was 1065.5, in April it was 1811.6, and on May 22 it had a maximum of 2134.2. This was increased by 334.3 per cent. This is the highest figure in 2018.

Table 2
Influence of queen bees daily egg laying when fed on different nutrients, ($X \pm Sx$)

The date research took place	n	1 st control group, 50 % sugar syrup	% CV	2 nd experimental group 50 % sugar syrup- <i>germinated wheat syrup</i> (sumalak)	% CV	3 rd experimental group 50 % sugar syrup + "Multimax" premix	% CV
17.03.	10	580,1±4,5	4,40	613,4±10,1	4,54	593,3±9,4	4,49
29.03.	10	670,4±5,4	4,50	1013,4±70,4	3,51	931,7±80,3	2,44
09.04.	10	915,4±6,7	4,90	1240,5±81,4	2,80	1114,2±89,8	2,50
21.04.	10	1090,5±9,00	5,00	1775,6±31,5	3,22	1663,3±22,1	3,19
03.05.	10	1119,1±7,40	5,01	2061,3±44,4	3,30	1963,1±24,1	3,20
14.05.	10	1200,4±6,76	5,50	2340,1±31,8	3,96	2160,3±30,9	3,87
26.05.	10	1560,7±7,04	6,71	2453,5±48,1	4,52	2280,0±42,5	4,49
12.06.	10	1818,6±9,01	6,00	2505,5±81,2	4,80	2304,2±42,5	4,40
24.06.	10	1980,1±8,04	6,50	2548,5±76,1	5,15	2300,1±41,4	5,00

Table 2 shows that local bee families were fed with the "Multimax" premix, and in Experiment Group III, the daily egg-laying rate of queen bees increased rapidly during the season. Initially, in March, its daily egg

production was 593.3 eggs (Cv, 4.49%), while in April, it reached 1114.2 eggs (Cv, 2.50%), and this figure was considerably higher with 127.7 per cent from the control group. It constituted to 2280.0 pieces (Cv, 4.49%) at the end of May, resulting in an increase of 222.2% compared to the control group, and to the highest level in mid-June, was 2304.2 pieces (Cv, 4.40). %), which was an higher with 126.7% than that of control group. This is the highest figure. ($R > 0,999$).

Similarly, in Experimental Group II, which was fed with germinated wheat syrup (sumalak), the daily number of eggs laid by queen bees in March was 613.4 pieces, while in April this number grew and constituted to 1240.5 pieces. The increase compared to the control group was 135.5% (Cv 2.80%), with the highest number of laying eggs of queen bees observed in June and it was 2548.5 eggs. The increase was 128.7% compared to the control group (Cv 5.15%). This is reliably true in all groups, with a confidence level of $R > 0,999$.

From the first day after the queen bees hatched from the bee eggs, we also studied their daily weight. Data on this are given in Table 3.

Table 3
Effect of different nutrients on the weight of mother bees per day, (mg)

Groups	n	Weight of unfertilized queen bees, mg.		
		Lim	X±Sx	Cv, %
April 28				
1 st control group, 50 % sugar syrup	10	185-210	196,2±2,81	4,53
2 nd experimental group 50 % sugar syrup- <i>germinated wheat syrup</i> (sumalak)	10	214-234	224,3±2,54	3,58
3 rd experimental group 50 % sugar syrup + “Multimax” premix	10	190-223	214,0±3,49	5,16
May 13				
1 st control group, 50 % sugar syrup	10	188-217	199,0±3,11	4,93
2 nd experimental group 50 % sugar syrup- <i>germinated wheat syrup</i> (sumalak)	10	220-242	230,0±2,53	3,47
3 rd experimental group	10	195-231	215,1±4,69	6,89

50 % sugar syrup + “Multimax” premix				
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From the data in Table 3, it can be seen that in the experimental group II fed with biologically active substances, this figure was 28.1 mg or 115.6% higher than the weight of mother bees in the control group in April. ($R > 0.999$). In the III experimental groups, in April, the queens weighed 17.8 mg more than the control group. Similarly, in queen bees raised in May, these figures are clearly visible. In Experiment Group II, this figure was 31.0 mg higher ($R > 0.999$), and the variability was $C_v, 3.47\%$. ($R > 0.999$) In the III experimental group, compared with the control group, the mother bees gained 16.1 mg or 109.1% more weight. With the onset of spring, the bee family's need for protein-rich foods becomes more noticeable. In nature, during periods of low pollen and nectar, it is important to feed them with protein-rich foods, along with honey and sugar syrup.

Conclusion. During our two-year study, the following conclusions can be drawn from the results obtained.

- feeding germinated herbal wheat syrup (sumalak), which is rich in vitamins, to bee families, which spent a lot of energy and strength during the winter and became lean from the winter, had a positive effect on the development of the bee family;
- this brings the bee family to health and improved its resistance to various diseases;
- it has been found that the number of offspring in the bee family increases and the daily number of eggs laid by the mother bees increases day by day.

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