The effectiveness of experimental herbal preparations in organic animal husbandry

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Abstract. Rabbit breeding is a promising branch of animal husbandry. Rabbits provide delicious dietary meat, valuable fur raw materials and down, while using cheap and affordable feed: grass, hay, branch feed, a little grain, and in poultry farming only grain. The development of rabbit breeding in our time requires a reliable infrastructure that connects supply and demand, processing, technological and veterinary services. In addition, all rabbit breeders must be united in a single organization. This article examines the effect of Ked and LBA preparations on the reproductive qualities of rabbits. The positive effect of drugs on multiple pregnancies, the weight of rabbits and safety has been experimentally proven.

1. Introduction
When organizing the production of rabbit meat, the main task is to create a single balanced chain of all links, from the technology of growing rabbits to selling to the final consumer. One of the main parts of the technological process is the production of feed [1-5].

In the composition of modern feed, in addition to proteins, fats, carbohydrates, biologically active substances must be present. It is a complex of minerals, micro-and macronutrients, amino acids, enzymes, hormones, antioxidants, preservatives, structure-forming agents, antibiotics, medicinal and preventive products, and vitamins [6-11].

An important role in the metabolic reactions of rabbits belongs to biologically active substances. For several decades, there has been a growing interest in increasing the productivity of fur-bearing animals. A prominent place in these studies is given to the study of plants as sources of vitamins, enzymes and other biologically active compounds. Primorye rabbit breeders have unused reserves to increase rabbit production.

Preparations from coniferous trees have a biological and specific effect on the body: they stimulate the secretion of the glands of the gastrointestinal tract, improve intestinal peristalsis, have a beneficial effect on various diseases of the digestive tract (peptic ulcer, gastritis, colitis, enterocolitis), prevent vitamin deficiency, atrophic and dystrophic lesions of organs and tissues, increase the body's resistance to various infections. Animals that regularly receive coniferous preparations with food do not suffer from osteomalacia, rickets, altrophagia and other diseases [12-17].

When studying the influence of Amur velvet bast, it was found to have a positive effect on the physiological state, the reproductive capacity of Minks of the main herd, the growth of young animals and the quality of skins, and economic efficiency.
Previously, we conducted reconnaissance studies to study the effect of the drug "KED+LBA" on the productivity of suckling and lactating rabbits, and the drugs KED and LBA on the viability of bees in the Primorsky territory.

2. Methods and materials

Purpose of research work is to determine the effect of the drug "KED+LBA" on the reproductive abilities of rabbits and Queen bees.

The work was carried out in rabbit farms in Primorsky Krai and training-scientific-industrial apiary of the Primorskaya state agricultural Academy. Before carrying out a scientific and economic experiment to include the drug "KED+LBA" in the diet of suckling rabbits of the California breed, its chemical composition was studied in the Ussuri branch of the Federal state budgetary institution "Primorsky inter-regional veterinary laboratory".

The drug "KED+LBA" was obtained in the laboratory of the Federal state educational institution of Primorskaya gsha by combining KED and LBA preparations. The ratio of the weight parts of the drug KED to the drug LBA was 8:2. The Drug "KED+LBA" has the smell of pine cones, light brown color, looks like powder, tastes bitter.

In the scientific and economic experiment to study the effect of the drug "KED+LBA" on the reproductive abilities of rabbits, 3 groups of suckling (pregnant) Queens were formed with 15 heads each. Rabbits were selected according to the principle of analogues, taking into account live weight, age and physiological state. All experimental animals were fed granulated feed and hay to their heart's content. The drug was introduced into the feed mixture during the production of pellets on the OGM-1 granulator according to the diet.

The animals were kept in the same conditions. The first group was a control group, the second and third were experienced.

In the control group, rabbits were given a basic diet (OR), in the second group, the drug "Ked + LBA" was added to the main diet at the rate of 5 mg per 1 kg of live weight, and in the third group -10 mg per 1 kg of live weight.

During the entire experiment, the drug "KED + LBA" was set in periods of 10 days with the same interval. Intact rabbits did not receive the drug "Ked + LBA".

Evaluation of the effectiveness of various doses of the drug "KED+LBA" was studied by the following indicators: fertility, milk production, productivity of rabbits, safety of rabbits and suckling rabbits. Fertility was calculated based on the number of live and stillborn rabbits per female rabbit on average. The milk content of rabbits was determined by the generally accepted method of growth of young animals for the first 20 days of lactation. The productivity of rabbits was determined by the number of rabbits deposited at the age of 45 days per head. The safety of rabbits and suckling rabbits during the experiment was determined by daily registration of waste.

The reproductive capacity of Queen bees was determined by their egg production. Egg production was calculated by dividing hundreds of cells with brood by 12 (this is the number of days that pass in bees at the pre-pupal and pupal stages, inside a sealed cell).

4 groups of 10 bee colonies were formed for the research. in each. Families were kept in typical two-body hives. The same conditions of keeping and feeding were created for them. Groups were formed by the method of analog pairs, taking into account the strength of bee colonies, the availability of food reserves and the age of Queens.

The control group received sugar syrup; 1 experimental group-sugar syrup + ked; 2 experimental group-sugar syrup + bast of Amur velvet; 3 experimental group-sugar syrup + " KED + LBA»

3. Results

When studying the chemical composition of the drug "KED+LBA", it was found that 100 g of dry matter contains raw nutrients, %: protein-5.64; fiber-25.60; ash-5.0; fat-10.60; micro-and macronutrients: calcium-2.38, phosphorus-0.38, copper-2.90, zinc-16.20 mg / kg, manganese-12.24 mg / kg, iron-27.14 mg/kg.
During the reproduction period, the feed consumption of rabbits in the control and experimental groups was almost the same. The diet in the control group consisted of feed-29.5 kg, hay-4.7 kg, and exchange energy-295.7 MJ. Accordingly, in the first experimental group – 30.2 kg, 4.7 kg, 294.2 MJ; in the second experimental group-29.7 kg, - 4.8 kg. 295.9 MJ. The reproductive capacity of rabbits is shown in table 1.

Table 1. Reproductive quality of rabbits.

| Index                                    | Group       |
|------------------------------------------|-------------|
|                                          | I control   | II experimental | III experimental |
| Amount of rabbits, heads                 | 15          | 15              | 15              |
| The obtained bucks, heads                | 117         | 123             | 119             |
| Fertility of rabbits, head (M±m)         | 7.9 ± 0.14  | 8.2 ± 0.12      | 7.9± 0.09       |
| Live weight of a baby rabbit: (M±m)      | -           | -               | -               |
| born, g                                  | 58.7 ± 1.20 | 59.7 ± 1.42     | 59.2± 1.10      |
| in 20 days, g                            | 329.9 ± 7.52| 354.4 ± 8.24    | 348.6± 7.11     |
| in 45 days, kg                           | 1.21 ± 0.01 | 1.90 ± 0.01***  | 1.27± 0.02***   |
| Milk content of rabbits, kg (M±m)        | 4.46 ± 0.13 | 5.09 ± 0.14***  | 4.78± 0.12***   |

***P ≤ 0.001

The table shows that in the first experimental group, six more rabbits were born than in the control group, and in the second experimental group, two more rabbits were born. Fertility in the first experimental group is 0.3 rabbits higher than in the control group, and in the second experimental group at the same level as the control group.

The intensive growth of suckling rabbits is largely due to the high nutritional content of rabbit milk. In the first days of life, rabbits feed exclusively on their mother's milk. For one gram of weight gain, it is enough for a rabbit to get two grams of mother's milk. The females of the first experimental group, where the drug "KED + LBA" was given in the amount of 5 mg/head, had the highest milk content. The milk content of rabbits of the first experimental group exceeded the milk content of control rabbits by 0.63 kg, and the second experimental group by 0.32 kg with a high degree of confidence (p≤0.001). These indicators indicate that the drug "KED + LBA" had a positive effect on the reproductive ability of rabbits.

The results of live weight at the time of depositing rabbits at 45 days of age confirm the positive effect of using the drug "KED + LBA" at a dose of 5 mg/kg of live weight. The live weight of rabbits in the first experimental group was 690 g higher than in the control group (p≤0.001), and in the second experimental group by 60 g (p≤0.001). The number of rabbits in the litter when dropping off from the mother is an important indicator of economic efficiency. The safety of rabbits and suckling rabbits before jigging, and the yield of young animals for jigging are shown in table 2.

Table 2. The safety of rabbits and suckling rabbits before jigging.

| Index                                    | Group       |
|------------------------------------------|-------------|
|                                          | I control   | II experimental | III experimental |
| Safety, %:                               | -           | -               | -               |
| Rabbits                                 | 93.3        | 100             | 93.3            |
| Suckling rabbits                         | 85.4        | 93.2            | 90.1            |
| Output of young animals to jigging, on a rabbit (V ±m), goal | 6.6 ± 0.44 | 7.8 ± 0.33     | 7.4 ± 0.37     |
Analysis of the data in table 2 showed that in the control group and in the second experimental group, one rabbit fell, while in the experimental group the safety was 100%. There is a positive trend of improving the productivity of rabbits during the suckling period. The highest yield of young animals to jigging was in the first experimental group, where the drug "KED + LBA" was given at a dose of 5 mg / kg of live weight -7.8 heads per rabbit. In the control group, this indicator was 6.6 goals in the second experimental group, 7.4 goals per rabbit, i.e. the yield of young animals in the experimental groups was 18.1% and 12.1% higher (p≤0.1).

The results of studies in the first accounting period, after the exhibition of families from the winter garden, show that the egg production of Queens of the first group was 139.2± 29.69 eggs per day, and the second group - 109.2±27.65 eggs per day. The range of variation in the indicator within the group is very large and ranged from 50 to 325 eggs.

As bees accumulate in the family, the intensity of egg laying by the uterus increases, and after 12 days it is 380.9± 50.69 in the first group, and 444.2±51.77 eggs per day in the second group.

Before the start of the main honey harvest, the number of eggs laid by the uterus continues to increase, by the first decade of June, the average daily egg production of Queens is almost identical. In the second decade of June, the peak of egg production occurs. the uterus of the first group lays 9.6 % more eggs than the uterus of the second experimental group.

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With the onset of the main honey harvest, the egg production of Queens of all groups is reduced, as bees limit the oviposition of the uterus, filling the free cells with nectar. The average daily value of this trait in the control group was 869.2 eggs, in the second experimental group - 916.7 eggs with a difference between them of 5.2 %.
Figure 2. Egg Production of Queens in preparation for the 2019 honey harvest.

The maximum average daily egg production is observed in the second decade of June in group 1 Queens and is 1249.2 eggs per day. During the main honey harvest, bees switch to collecting and processing nectar, and the egg production of Queens during this period decreases by 27.4% (group 1) and 17.7% (group 2) compared to the pre-honey harvest value.

4. Discussion

In some individuals, egg production can reach the value of 2025 eggs per day (3 experimental group); 1800 eggs (2 experimental group).

The drug "KED+FOREHEAD" in a dose of 5 mg/kg of live weight in the diets skrajnych and lactating rabbits has a positive effect on reproductive ability, provides fertility increase of 3.8%, milk yield of 12.1% with a high degree of confidence (p≤ 0.001), live weight of suckling rabbits aged 20 and 45 days 7.4-57.0 %, respectively, the output of youngsters to usadke 18.2 % (p≤0,1).

Herbal preparations ked, bast of Amur velvet and "KED + LBA" (in a concentration of 1 g per 1 liter of sugar syrup) have a stimulating effect for Queen bees. The number of eggs laid by them during the period of preparation of families for honey collection increases by 3-13%.

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