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THE USE OF MICROALGAE SPIRULINA AND CHLORELLA IN FEEDING BEE COLONIES

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Abstract*. Microalgae are cultivated in many countries and used for food and medical purposes. Microalgae are successfully used in various branches of animal husbandry as feed additives, Research results show that stimulating feeding of bee colonies with sugar syrup with the addition of microalgae spirulina and chlorella increase honey productivity by 9-11% and wax productivity by 11% .*

Keywords: *microalgae, spirulina, chlorella, bee colonies feeding*

Microalgae are cultivated in many countries and used for food and medical purposes. in addition, due to its high nutritional value, biological activity and low cost, Microalgae are successfully used in various branches of animal husbandry as feed additives. Much attention is paid to two types of unicellular algae: spirulina platensis (spirulina) and chlorella vulgaris (chlorella). they are rich in high-quality protein (up to 60-70%), contain all the necessary amino acids in their composition.

All works are due to the influence of *S. platensis* and *C. vulgaris* microalgae on the productivity of bee colonies.

To achieve this goal, the following tasks were set:

1. To study the effect of microalgae spirulina and chlorella on honey
2. To study the effect of microalgae spirulina and chlorella on the wax productivity of bee colonies.

Research material and methodology

The research was carried out at the Educational and Experimental apiary of the Russian State Agrarian University - Moscow Agricultural Academy named after K.A. Timiryazev, which has 30 bee families of the Carpathian breed.

Preparation of sugar syrup with the addition of spirulina and chlorella

Three groups of 6 bee colonies were formed. The groups differed in the types of top dressing: The first group (control) received pure sugar syrup, the second group – spirulina at the rate of 1.5 g of dry weight per liter of syrup, the third group – chlorella at the rate of 1.5 g of dry weight per liter of syrup, during which 300 ml of sugar syrup was fed to the bees every other day.

The results of our own research

1. Honey productivity of bee colonies

Honey productivity of bee colonies was assessed at the end of the beekeeping season by the amount of honey collected by each colony

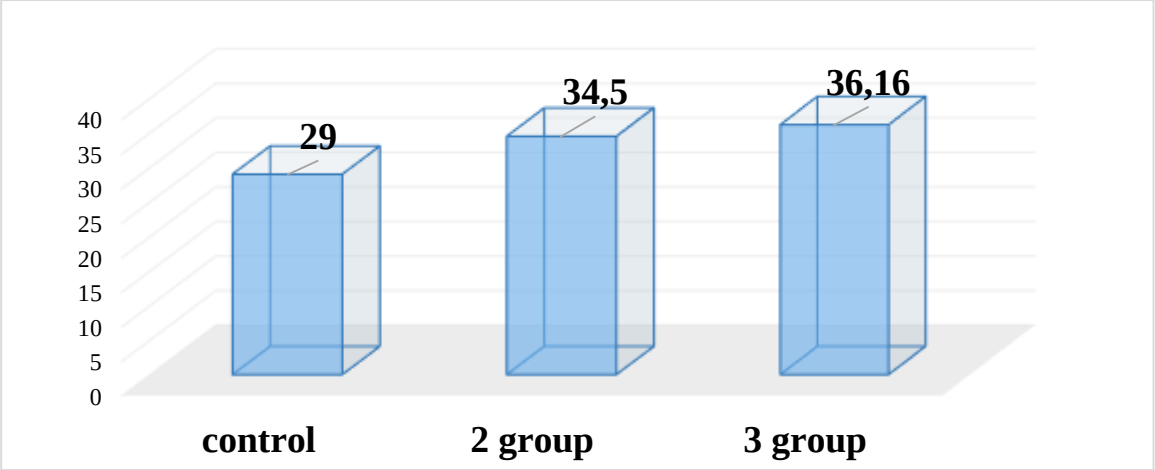

Figure 1. Honey productivity of bee colonies

2. **Wax productivity of bee colonies**

Data on wax productivity of bee colonies of the control and experimental groups.

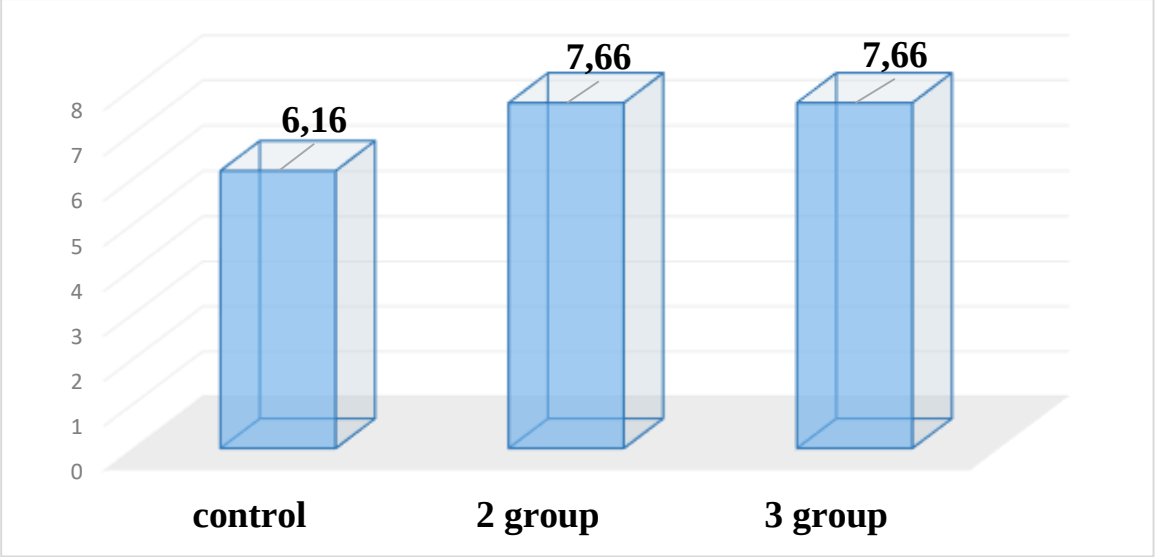

Figure 2.Wax productivity in bee colonies

Conclusions:

1. The maximum honey productivity was shown by bees receiving spirulina and chlorella by 19.0-24.7%, in comparison with the control group.

2. The maximum wax productivity was shown by bee colonies of the 2nd and 3rd groups (spirulina and chlorella) by 24.4%. Compared to the control group.

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STUDYING THE EXPERIENCE OF THE UNITED STATES OF AMERICA IN CONDUCTING THE AGRICULTURAL CENSUS

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Abstract. *The All-Russian agricultural census is still a large-scale government project, and the results of the agricultural census are important and necessary for the development of the agricultural sector and increasing its productivity. Thus, it is necessary to study the experience of countries with developed market economies (for example, America) in conducting an agricultural census that has a wide range of indicators in order to fill in the gaps in the Russian agricultural census program.*

Keywords: *agricultural census, land, agricultural production, farms typology.*

To develop proposals for improving the program of statistical observation, summary, analysis and presentation of research results in the field of studying the structure of agricultural production according to census data, it is necessary to take into account not only Russian and domestic experience and expertise. in conducting statistical surveys, but also advanced foreign experience. The study of the experience of the USA and the experience of the EU countries in conducting agricultural censuses is of particular value.

The Census of Agriculture is a complete count of U.S. farms and ranches and the people who operate them. Even small plots of land - whether rural or urban - growing fruit, vegetables or some food animals count if $1,000 or more of such products were raised and sold, or normally would have been sold, during the Census year. The Census of Agriculture, taken only once every five years, looks at land use and ownership, operator characteristics, production practices, income and expenditures. For America’s farmers and ranchers, the Census of Agriculture is their voice, their future, and their opportunity.

The Census of Agriculture provides the only source of uniform, comprehensive, and impartial agriculture data for every county in the nation. Through the Census of Agriculture, producers can show the nation the value and importance of agriculture and can influence decisions that will shape the future of U.S. agriculture.