
**THE USE OF MINERAL COMPOUNDS AS A FEED SUPPLEMENT TO
ENHANCE THE PRODUCTIVITY OF BEE COLONIES**

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Abstract

This article analyzes the effects of various methods—including preparing bee colonies for winter, establishing food reserves, disinfecting hives, and supplementary feeding—on overwintering outcomes.

Keywords: Beekeeping, bee family, wintering, fodder reserves, Apimax, hive, technology.

Introduction

In countries with developed apiculture sectors, scientific research on local honeybee populations has been conducted for many years. In this context, one of the most pressing issues today is the development of modern innovative technologies to increase the resistance of local honeybee populations to low temperatures during the wintering period. This includes fundamentally improving the quality of honeybees, increasing their numbers, providing them with natural and supplementary feed to get them through winter without losses, and creating a technology to obtain natural, ecologically pure honey products from them.

Satisfying the global demand for food products is one of the most important tasks of our time. According to 2026 data from the Food and Agriculture Organization of the United Nations (FAO), China, Turkey, Argentina, Iran, and Ukraine are the leading countries in global honey production. However, regarding the number of bee colonies, Asia accounts for 44.6%, Europe for 24.7%, the Americas for 17.7%, Africa for 11.0%, and Oceania for 2.0%. A decline in the number of bee colonies has been observed recently.

Objective of the study: To study the overwintering technology of bee colonies under the conditions of the Republic of Karakalpakstan.

Object of research: The apiary of the farm enterprise "Djubaev Baxtiyar Taylakovich," located in the "Diyxan arna" citizens' assembly of farmers in the Nukus district, Republic of Karakalpakstan.

Main Part. In February–March 2026, a post-wintering spring inspection of the bee colonies was carried out. During this inspection, all old queen bees were replaced with young ones, and measures were taken to strengthen and develop the colonies. Their bonitation was also conducted at the same time.

In the first half of March, all honeybee colonies were opened and inspected once, and the necessary measures were carried out (cleaning and disinfecting the hive, replacing old unusable frames, expanding hives, and feeding the bees a medicated sugar syrup mixture, among others). In addition, the preparation of a spring inspection report for the bee colonies, the accounting journal, and the daily monitoring logbook were reviewed. Appropriate feeding and care conditions were established for the honeybee colonies. During the inspection, the strength of the bee colonies, the amount of brood in the colony, their food supply, and the general state and condition of the hive were examined and analyzed.

In our republic, 90% of honeybee colonies are migratory, while only 10% are stationary in the mountains and are being developed extensively. The technology for intensifying beekeeping is divided into several sections: 1- carrying out consistent breeding work; 2- ensuring the autumn development of honeybee colonies and preparing them as strong units for wintering; 3- conducting the wintering period under normal conditions, and preparing the colonies by accelerating the growth and development of young worker bees from January to March; 4- consistently migrating the honeybee colonies; 5- supplying the honeybee colonies with young queen bees every year.

Regardless of the specialization of honeybees—whether for honey production, plant pollination, bee reproduction, or medical applications—it is essential to study their breeding characteristics. These include the normal overwintering of bee colonies, their temperament (gentleness), the early development of the colony, the queen bee's egg-laying capacity, swarming tendency, genetic lineage, productivity, and other factors. In the experiment, the honeybees were fed and supplemented with "Apemix" additives according to a traditional and planned regimen.

Results of wintering the studied bee colonies results

No	Indicators	I – control group	II- experimental group	III- experimental group
1	Strength of bee colonies in the autumn season, kg (2025)	1,50	1,52	1,51
2	Winter loss of honey bee colonies, kg (2025)	0,20	0,18	0,19
3	Strength of the bee colony on March 12, in kg (2026)	1,30	1,33	1,31

According to the table data, it was determined that the strength of the bee colonies was considerably higher in experimental groups II and III, as they were provided with supplementary mineral nutrients.

Conclusion

When we observed the bee colonies in control group I and in experimental groups II-III after wintering, the mortality rate showed somewhat lower indicators.

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