UDC 638.1
AGRIS L20
https://doi.org/10.33619/2414-2948/117/47

THE IMPACT OF PACK BEES ON HONEY PRODUCTION

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ВЛИЯНИЕ ПАКЕТНЫХ ПЧЁЛ НА ПРОДУКТИВНОСТЬ МЁДА

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Abstract. In this research, the impact of package bees on honey production is investigated and proposals are made regarding the role of package beekeeping in the production of beekeeping products and development perspectives. Pack bees are new bee families created by separating from existing families. They are used in beekeeping to increase families, strengthen weak families and establish new bee families. The honey production of pack bees varies between the first province and the following provinces. The Naxchivan population of the Yellow Qafqaz bee genus (Apis mellifera caucasuca flova populatio Nachitshevanica), spread on the territory of the Naxchivan Muxtar Republic of the Republic of Azerbaijan, is used to breed in the first half of May and June. A new package bee family was created by separating 2 bee frames, each with 1.2 kq bees and 2 bee increments. The results of the conducted investigation show that the package bee families received on the dates of 01.05.24, 23.05.24 and 23.05.24 produced the main nectar income during the period. They were able to collect a total of 24.5±2.3 kq of honey by turning it into their families and filtering 8 kq of honey from each of them in the seasonal supply and their own winter food. Since the package bee families taken from the bee families on 15.06.24 were transferred to the main bee family in the middle of the main nectar season, they were only able to collect winter reserve food for themselves. In the first 3 months, pack bees directed their main energy to the formation of the family and candle production, and honey production was minimal. The productivity of package bees depends on the time they are collected, the quality and quantity of the bees in the packages, the conditions of honey collection, as well as the type of bees. Proper management and nutrition conditions play an essential role in increasing productivity.

Аннотация. Изучено влияние пакетных пчёл на продуктивность мёда, а также рассмотрена роль пакетного пчеловодства в производстве пчеловодческой продукции и предложены перспективные направления его развития. Пакетные пчёлы представляют собой новые семьи, сформированные путём отделения части пчёл и рамок с расплодом от существующих семей. Они широко применяются в целях увеличения числа пчелосемей, укрепления слабых семей и создания новых полноценных семей. Медовая продуктивность пакетных семей варьирует в зависимости от времени их формирования и отличается между

Т. 11. №8 2025
https://doi.org/10.33619/2414-2948/117

первым и последующими годами развития. Исследование проводилось на основе пчелосемей Нахичеванской популяции Желтой Кавказской породы (Apis mellifera caucasica flova populatio Nachitshevanica), распространённой на территории Нахичеванской Автономной Республики Азербайджана. В первой половине мая и июня 2024 года из исходных семей формировались новые пакетные семьи путём отделения по 1,2 кг пчёл и двух рамок с расплодом. Результаты показали, что пакеты, сформированные 01.05.2024 и 23.05.2024, к периоду основного медосбора превратились в полноценные семьи, собравшие в среднем по 24,5±2,3 кг мёда, из которых по 8 кг товарного мёда было откачано, а также обеспечены корма на зимовку. Пакеты, сформированные 15.06.2024, достигли силы семьи уже в середине главного медосбора и смогли собрать лишь достаточное количество мёда для собственных зимних запасов. В течение первых трёх месяцев после формирования пакетные семьи расходовали основную часть энергии на развитие и строительство сотов, в результате чего продуктивность мёда оставалась минимальной. На медовую продуктивность пакетных пчёл существенно влияют сроки их формирования, количество и качество пчёл, условия медосбора и породные особенности. Эффективное управление и надлежащее кормление являются ключевыми факторами повышения продуктивности таких семей.

Keywords: Package bee, honey production, strengthening of families, development, Nakhchivan.

Ключевые слова: пакетные пчёлы, производство мёда, усиление семей, развитие, Нахичевань.

Package bee family - It is a form of beekeeping that is implemented by selling a certain number of worker bees together with the queen bee in special packages or transporting them to other places. The practice of package beekeeping creates the opportunity to earn income from beekeeping twice. The first opportunity is created when the package families are grown and sent, and the second is when the products produced from them are bought and sold [4]. Pack bees are a widely used method in beekeeping to form new families and strengthen existing families [12]. However, the production of these families has different dynamics compared to the families acquired through natural means. In order to make fruitful use of the vegetation of the regions rich in honey plants, pack families have 7-8 weeks left (until the end of April) to provide the main nectar income to these regions. should be sent [3]. During this period, the bees of the family families develop rapidly and become stronger, and in the main season their honey production becomes high. The purpose of this study is to systematically analyze the effect of pack bees on honey production.

Material and Methods

In the experiments, bee families of the Naxchivan population of the Yellow Qafqaz bee genus (*Apis mellifera caucasuca* flova populatio Nachitshevanica) spread in Naxchivan MR were used and the families were 12 frames. It was hidden in the honeycombs. It has developed normally over time and has been learned from bee families that comply with the standards set for the Azerbaijani environment [1, 2]. For the purpose of investigation, 2.5 and 2.0 kq of bee families will be kept for wintering in the summer of 2023, and in the summer of 2024, there will be 1.2 kq of worker bees and young queen bees each. The package consisting of bees has been formalized. Pack families were fed with sugar and sugar in a ratio of 1:1 and were kept under the environmental conditions of the local conditions. The amount of honey in the family is determined at the same time as the amount of bee increase. For this reason, by shaking the bees, it was freed from the bees and its

shape was determined. To determine the amount of bee increase, a large frame divided into quadrats (5x5 cm) was used. On average, nests of 100 bees are placed in each quadrant (5x5 cm) of the heavy-duty frame placed on the temple. The amount of bee increments was taken at one point every 12 days. During this period, bees develop in sealed honeycombs. In the bee families of the experimental groups, every 12 days during the active life of the bees, their current situation (the strength of the family, the amount of bee surplus and honey grown in the nest) and the changes that have occurred. has been specified. During the research, abstract-logical, monographic, analytical research methods, scientific publications and the results of our personal research were used. The collected materials were processed with the biometric method proposed by N. A. Ploxinski [4, 7].

Results and Discussion

In the experimental group, all essential processes were carried out in a timely manner to ensure the successful overwintering of bee colonies, their timely relocation, provision of forage sources, feeding with sugar syrup during nectarless periods and rainy days, and stimulation of the queen's intensive egg-laying in the hive. To ensure the intensive development of the colonies, auxiliary queens were used in the bee families [6].

A few days after placing the package bees into hives, sugar syrup prepared in a 1:1 ratio was added to the feeders, and feeding continued based on the bees' consumption of the syrup. During periods without nectar and pollen in spring and on rainy days, in addition to feeding with sugar syrup, pollen supplementation was also monitored. Depending on the changes in climate and seasonal conditions, flight entrances were widened and ventilation channels were kept open [10].

The results of the conducted research show that the package bee colonies received on May 1st, 10th, and 23rd, 2024, developed into primary bee colonies during the main nectar flow period, producing a total of 24.5±2.3 kg of honey and yielding 8 kg of marketable honey per colony during the season, while also collecting sufficient winter feed. The package colonies received on June 15th, 2024, only collected enough feed for their own winter survival as they turned into primary colonies during the middle of the main nectar flow.

In their first year, package bees primarily focus on establishing colony structure, which limits honey production. From the second year onwards, since the colonies are fully developed, honey productivity significantly increases [11]. Effective management and early-stage supplementary feeding enhance productivity [9]. The genetic quality, age, and reproductive capacity of the queen directly influence productivity [8].

The bee breeds used in package beekeeping must demonstrate rapid spring development and high productivity. Studies have shown that the yellow Caucasian honeybee (*Apis mellifera remipes* Gerst.), widespread across the Nakhchivan Autonomous Republic (NAR), belongs to the Nakhchivan population and that the queens begin egg-laying from the second ten-day period of February until the end of October—approximately 8–9 months per year. This extended period of activity makes the region favorable for developing breeding-focused beekeeping and implementing package beekeeping [3].

In the USA, hybrid families derived from the Bozdagh Caucasian and Italian bees are used to produce package colonies [11, 12]. In the Russian Federation, Bozdagh Caucasian × Central Russian hybrids and Central Russian bees are mainly used in the northern regions rich in untouched nectar-producing plants, while Carpathian bees are widely used in Ukraine [5].

Research shows that package bees derived from the Carpathian breed adapt easily to the desert climate of the Southern Ural region of Russia, showing a colony strength of 4.29 kg before the main flow. In comparison, Central Russian bees showed 2.99 kg, and Yellow Caucasian bees

showed 3.23 kg. During the season, Carpathian package bees produced 134.5 kg of honey, compared to 97.64 kg in Central Russian bees and 115.08 kg in Yellow Caucasian bees [6].

For successful artificial swarming, colonies must have sufficient strength, and only those with 2–2.5 kg of bees in autumn should be used [1].

To ensure the development of package beekeeping, it is essential to consider the role of both the average and absolute maximum and minimum air temperatures during different phenological stages of nectar-producing plants and various months of the vegetation period.

Conclusion

Pack bee families focus on the production of more wax and the development of the family in the first year, and the production of honey is limited. After the second year, productivity increases. Formation of pack families in early summer, efficient genetic control, utilization of young queen bees, proper management and nutrition measures, and frequent renewal of the queen bee accelerate this process. and can optimize productivity.

Acknowledgments: I would like to express my gratitude to Professor Dashgin Ganbarov for identifying the species studied.

Financing: The research it is financed and supported on the basis of the "Herbari Fund of Biology Department of Nakhchivan State University" project.

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Работа поступила
в редакцию 27.05.2025 г.

Принята к публикации
09.06.2025 г.

Ссылка для цитирования:

Tahirov A., Huseynov H., Rustamli Yu. The Impact of Pack Bees on Honey Production // Бюллетень науки и практики. 2025. Т. 11. №8. С. 362-366. https://doi.org/10.33619/2414-2948/117/47

Cite as (APA):

Tahirov, A., Huseynov, H., & Rustamli, Yu. (2025). The Impact of Pack Bees on Honey Production. *Bulletin of Science and Practice, 11*(8), 362-366. https://doi.org/10.33619/2414-2948/117/47