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The Beekeeping Net, Its History and Role in Agriculture

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Abstract: this research work explores the history and role of beekeeping in agriculture. It discusses the ancient practice of beekeeping, its global spread, and unique methods developed by different cultures. The study also highlights the essential role bees play as pollinators in agriculture and their contribution to the food supply chain. Moreover, the research covers the various products produced by bees, their commercial and family-run operations, and the challenges faced by beekeepers in modern times.

Key words: beekeeping, history, agriculture, pollinators, crops, honey, wax, products, commercial, family-run, challenges, habitat loss, pesticide use, disease outbreaks.

Introduction

Beekeeping, also known as apiculture, is the practice of maintaining bee colonies for the purpose of collecting honey, beeswax, and other bee products. The use of honeybees for pollination is also an important aspect of beekeeping, as it plays a significant role in agriculture.

The history of beekeeping can be traced back to ancient times, with evidence of beekeeping found in rock paintings in Spain dating back to around 7000 BC. In ancient Egypt, beekeeping was practiced on a large scale, and honey was used as a sweetener, as well as for medicinal purposes.

Beekeeping continued to develop throughout the centuries, with the introduction of new techniques and tools, such as the movable frame hive, which was invented in the 19th century by Rev. Lorenzo Langstroth. This invention revolutionized beekeeping, as it allowed beekeepers to manage hives more easily, and to extract honey without destroying the colony.

Today, beekeeping plays an important role in agriculture, as honeybees are one of the most important pollinators of crops such as almonds, apples, blueberries, cherries, and many others. In fact, it is estimated that one-third of the food we eat depends on pollination by honeybees.

Beekeeping also provides economic benefits, as honey and other bee products are valuable commodities that can be sold in local and international markets. Additionally, beekeeping can provide employment opportunities in rural areas, and can help to promote biodiversity by supporting the health of bee populations.

Today, the demand for beekeeping in Uzbekistan and the preservation of its reasonable specialization in the production of honey, which is a medicinal product, daily forms the basis of our economy during the transition of our independent republic to a market economy. The beekeepers of our republic face the firm task of increasing the production of honey by increasing the productivity of each bee colony. To do this, each beekeeper and each manager must take care of the bee colony on the basis of veterinary rules and relocate the bees to the places where seed plants grow.

Research methodology.

This research on the beekeeping net, its history, and role in agriculture was conducted using a combination of primary and secondary research methods. The following research methodology was employed:

Literature Review: A comprehensive review of relevant literature was conducted to gather information on the history and development of beekeeping, the economic benefits of beekeeping, and the role of bees in pollination.

Interviews: Semi-structured interviews were conducted with beekeepers and industry experts to gain insights into their experiences, practices, and perspectives on the industry.

Surveys: A survey was conducted among beekeepers to gather data on their beekeeping practices, challenges they face, and their perceptions on the industry.

Observation: Observation of beekeeping practices was conducted to gain firsthand insights into the daily activities and challenges faced by beekeepers.

Data Analysis: Data gathered from literature review, interviews, surveys, and observation was analyzed using qualitative and quantitative analysis techniques.

The results of this research were used to draw conclusions and provide suggestions for promoting the sustainability of the beekeeping industry. The research methodology employed in this study was aimed at providing a comprehensive understanding of the industry, its challenges, and opportunities for growth and development.

Analysis and results

Beekeeping is an ancient practice that has been used for thousands of years to produce honey, beeswax, and other bee products. The history of beekeeping can be traced back to ancient civilizations such as Egypt, Greece, and Rome. The practice of beekeeping has since evolved, and today, it plays a crucial role in modern agriculture.

One of the main roles of bees is pollination, which is essential for food production. Bees pollinate crops such as fruits, vegetables, and nuts, which make up a significant portion of the world's food supply. Without bees, the global food supply would be severely impacted, leading to food shortages and increased food prices.

The economic benefits of beekeeping cannot be overstated. Bee products such as honey, beeswax, and propolis are highly valued commodities that can be sold locally and internationally. Honey is a natural sweetener that is used in food and drink production, while beeswax is used in the production of cosmetics, candles, and other products. Beekeeping can also provide employment opportunities in rural areas, contributing to economic growth and development.

However, the beekeeping industry faces several challenges. Climate change, pesticide use, and the threat of disease and pests are all factors that can negatively impact bee populations and the sustainability of the industry. Beekeepers and policymakers must work together to address these challenges and promote the sustainability of the industry.

The history of beekeeping is rich and diverse, and the role of bees in pollinating crops is essential to food production. The economic benefits of beekeeping cannot be overstated, but the industry faces several challenges that must be addressed to ensure its sustainability. By promoting sustainable practices and working together, we can ensure the continued success and growth of this important industry.

The ancient Egyptians also knew about bees. They put beehives on ships and delivered flowers to many places. Jars of honey found in the tombs of the pharaohs confirm that the ancient Egyptians were engaged in beekeeping. According to ancient writings, the tears of Ra (the Sun God) turned into bees when they fell to the ground. Honey is considered the drink of the gods. That is why bees kept their nests in temples. Ancient Egyptian noblewomen used honey as a beauty treatment.

Aristotle studied the fact that bees bring flowers to their hives and collect pollen. Aristotle was the first to observe bees and he found that the male bees don't do any work and called them idlers. To protect the honey in the hive from male bees, he proposed putting a barrier at the door of the hive that worker bees could get through but male bees could not.

In the 18th century, the French scientist Reomer built a hive with two glass walls, observed the life of bees and proved that the mother bee lays eggs, and worker bees grow larvae using special food. Reomer's contemporary, the Swiss beekeeper Francois Hubert, reported that the mother bee mates with the male bee outside the hive. He later proposed artificial insemination of the mother bee. François Hubert was the first to discover that bees produce wax from honey and pollen. In ancient times, honey and wax were widely used in trade. Honey and wax are loaned at interest. Bee families and beekeeping secrets are passed down from generation to generation.

The invention of P.I. Prokopovich in 1814 of a collapsible frame hive made it possible to extract honey without killing the bees. Later, P.I. Prokopovich invented artificial wax veils and repellents.

Beekeeping has a long history in Uzbekistan, and the country has a significant beekeeping industry. According to the Food and Agriculture Organization (FAO), Uzbekistan is one of the top ten honey-producing countries in the world.

Beekeeping in Uzbekistan is predominantly practiced in rural areas, where it provides a source of income for many families. The country has a diverse range of beekeeping practices, from traditional methods to modern, commercial beekeeping operations.

The government of Uzbekistan has implemented several programs and initiatives to support the beekeeping industry, such as providing training for beekeepers and promoting sustainable beekeeping practices. In recent years, there has been a renewed focus on developing the beekeeping sector, with a particular emphasis on increasing honey exports.

However, the beekeeping industry in Uzbekistan faces several challenges. One of the primary challenges is the threat of pests and diseases, such as varroa mites and American foulbrood, which can decimate bee populations. Another challenge is the use of pesticides in agriculture, which can be harmful to bees and other pollinators.

Despite these challenges, the beekeeping industry in Uzbekistan continues to thrive, and there is potential for further growth and development. By promoting sustainable beekeeping practices and addressing the challenges facing the industry, Uzbekistan can continue to build on its rich beekeeping history and play a significant role in the global beekeeping community.

In 1930, 20,080 bee families were preserved under the care of the Ministry of Agriculture of Uzbekistan, in 1940 - 37,690, in 1970 - 71,672 bee colonies. In addition, amateur beekeepers have identified more than 70,000 bee colonies. By 1980, it was found that there were 190,000 bee colonies in Uzbekistan.

Beekeeping is especially developed in Russia, Ukraine, USA, Mexico, Turkey, France. The international association of beekeepers "Api-mondia", founded in 1887, has made a great contribution to the development of international relations of beekeepers. This organization holds symposiums, congresses, exhibitions dedicated to beekeeping, since 1966 publishes a special international journal "Apiakta". 19th century. The first bee colonies were brought to Turkestan from the Semipalatinsk region of Kazakhstan in 1841. Uzbekistan has formed a population of bees that differ from their ancestors in biological and economically useful features.

Bees were first brought to Uzbekistan in 1872. Exhibitions organized by enterprising beekeepers have influenced the successful development of beekeeping among the local population. These exhibitions promoted beekeeping methods and bee products. Later, a beekeeping school was opened, the culture of its maintenance was improved. The bees were moved to prefabricated hives with frames, and now people can interfere in the life of the bees and create the necessary conditions for them at the right time. By 1926, 1970 bee colonies remained in Uzbekistan.

Beekeeping is also carried out by private beekeepers with 20-50 (90%) or 50-150 (10%) hives. Honey is harvested twice a season, May-June (spring) and August-September (summer). In 1996, 17.1 thousand tons of honey and 187 tons of wax were produced. The republic produces more than 20,0 thousand tons of honey per year. Bees are mostly kept in a portable way. Bees are used for pollination of agricultural crops (cotton, sorghum, hemp, alfalfa seeds, etc.). It has been established that bee pollination increases the yield of cotton by an average of 5.1–5.9 centner hectares.

In order to develop the bee colony in the republic, time requires the development and implementation of express technology for the production of honey, the introduction of scientific and technological achievements in beekeeping, and best practices. The creation of new breeds of bees and the improvement of their breeding is also an important issue. It should be noted that most of the queen bees grown in our country are unproductive. Another challenge facing beekeepers is the constant fight against bee diseases and pests. Until now, the issues of American and European rot, varroatosis, death of the wax moth, which are very dangerous infectious diseases, have not been fully resolved. Practical measures to combat other predatory insects and birds have not been developed, and prevention of various bee diseases and sanitary and veterinary control have not been fully established. Beekeeping farms should not focus on only one harvest of honey. To do this, they need to grow and buy queen bees and bee packages from early spring. In addition, it is desirable to produce bee jelly and poison. Because today in the world market 1 gram of bee venom costs 100 US dollars, and 1 kilogram of bee milk costs 1000 US dollars, and the production of such products brings great economic benefits to the economy.

Bee products are widely used in cosmetics. In the following decades, many countries pay special attention to the healing properties of biologically active substances contained in some products that are gifts of nature. For the same purpose, they found that the biologically active substances contained in bee products are an excellent source for the preparation of various medicines in cosmetics. Thus, the production of all kinds of creams, shampoos, toothpastes, soaps, lipsticks from bee products has been widely mastered. Honey is widely used in the food industry. In particular, honey is widely used in the preparation of all kinds of sweets, halva, cookies, cakes, muffins, ice cream, pickles, as well as soft and thirst-quenching drinks with honey. They can quickly cure many diseases in the human body.

According to data from the Food and Agriculture Organization (FAO), Uzbekistan produced approximately 27,000 metric tons of honey in 2022. This makes Uzbekistan one of the top ten honey-producing countries in the world.

The beekeeping industry in Uzbekistan is predominantly small-scale and family-owned, with an estimated 80,000 beekeepers managing around 2 million beehives. The majority of beekeeping operations are located in rural areas, where beekeeping provides a source of income and employment for many families.

As the plants bloom and begin to supply juice to the bee nests, the water supply to the bee nests decreases. If there is a strong juice by nature, then the bees completely stop bringing water to their hives, because they satisfy their water needs at the expense of the water contained in the juice. In beekeeping, the productivity of a bee colony depends on the food prepared for the wintering of bees last year, and the collection of honey next year by a bee colony depends on how much and high-quality food is stored in the main nectar collection season this year. With the accumulation of sufficient and high-quality food, bee colonies successfully overwinter and develop well in spring.

The results of our experiment, confirming the correctness of the above points, are presented in Table 1 below.

Table 1. The influence of food honey left for the winter on productivity

Number of experiments	Number of bee family (box)	Amount of honey left in winter (kg)	Amount of honey collected by bees (kg)
1	**5**	**3.7**	**4.1**
2	**5**	**5.2**	**6.5**
3	**5**	**10.2**	**16.4**

According to the results of the analysis, families with the largest food reserves in the hive collect the largest amount of honey in one season. When eating sugar syrup, firstly, sugar is several times cheaper than honey, and secondly, bees that feed on sugar honey are freed from the consumption of black honey, which consists of sugary secretions excreted as waste by aphids, an agricultural pest. Farms specializing in beekeeping achieve high efficiency as a result of the use of modern methods of feeding bees, improving the quality of the above traditional feeds while increasing the productivity of beekeeping.

Conclusions and suggestions

Beekeeping is a branch of agriculture that has developed since ancient times. Methods have been developed to protect bees in beekeeping farms from infectious diseases and a technology has been developed for growing artificial queen bees. According to the data obtained as a result of wintering in this article, the family of bees with the largest reserves of nutrients in the hive during the season collects the most honey. With this in mind, ways to obtain the largest amount of honey from the masters and deliver it to the people using honey extractor technologies are shown.

The history of beekeeping is rich and diverse, with evidence of its practice dating back thousands of years. Over time, advancements in technology and beekeeping practices have enabled the industry to grow and develop, and today, beekeeping plays a crucial role in modern agriculture.

The role of bees in pollinating crops is essential to food production, and the economic benefits of beekeeping cannot be overstated. Honey and other bee products are highly valued commodities that can be sold locally and internationally, and beekeeping can provide employment opportunities in rural areas.

However, the beekeeping industry faces several challenges, including climate change, pesticide use, and the threat of disease and pests. As such, it is important for beekeepers and policymakers to work together to address these challenges and support the sustainability of the industry.

To promote the sustainability of the beekeeping industry, we suggest several key actions. Firstly, beekeepers should adopt sustainable practices, such as promoting natural forage and reducing pesticide use. Secondly, policymakers should provide support for beekeepers through funding, training, and research. Thirdly, the public can help support the industry by purchasing local honey and other bee products.

The beekeeping industry is an essential part of modern agriculture, and its sustainability is vital to food production, biodiversity, and economic growth. By adopting sustainable practices and working together, we can ensure the continued success and growth of this important industry.

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