

REGIONAL DEVELOPMENT OF BEEKEEPING

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Abstract

The study represents the analysis of the economic efficiency of production on example of regions of Uzbekistan. The current state of beekeeping as a comprehensive analysis of the current level of development of beekeeping was carried out, regional differences in the development trends and efficiency of the industry were considered, and the main factors affecting the efficiency of production and sale of beekeeping products were identified.

Keywords: regional development, production of bee products, pollination.

Introduction. The branch of beekeeping is the breeding and maintenance of honey bees, their use for pollination of agricultural entomophilous plants, as well as the production of bee products. According to the state statistical reporting, beekeeping belongs to the livestock industry. However, the basis of its existence and development are melliferous plants, including entomophilous crops grown in the crop industries. Pollination by bees significantly affects the yield of these crops, and also provides high-value bee products that are used in human nutrition. The most common of these is honey. In addition, bee products are used in many industries, medicine, pharmacology, etc.

Beekeeping gives: honey - a high-calorie food product with therapeutic and dietary properties; wax is a raw material for industry; pollen, bee venom, royal jelly and propolis used in medicine and cosmetics. The economic efficiency of beekeeping is measured by cost indicators: cost, gross output, gross income, profit. The growth of the efficiency of beekeeping is a long-term process of increasing the volume of production associated with the dynamics of the impact of a system of factors on the growth of economy. Under the factors of growth in the efficiency of the industry, one should understand the totality of resources of production potential in the turnover of the industry, contributing to an increase in the volume of beekeeping products based on the rational functioning of the management system in the agro-industrial complex. Beekeeping, as a complex system, consists of many heterogeneous objects. However, among the complex of factors that are inherent in it as a system, the leading one is the principle of integrity. Beekeeping is permeated with many connections of different levels, but the economic state of the industry can always be established through a set of heterogeneous enterprises. As a holistic education, it is in a systemic environment.

There are more than 50 million bee colonies in the world, the number of beekeepers is about 7 million. The largest number of bee colonies is in China (15%), Russia (7%), Turkey (6%), USA (5.5%), Poland and Mexico (5% each). Honey production in China reaches 200 thousand tons, in the USA - 100 thousand tons, in Mexico - more than 50 thousand tons, in Uzbekistan - about 19 thousand tons. In terms of the number of bee colonies, Uzbekistan ranks nineteenth in the world after China, and in terms of commercial honey production, it is fourth after China, the USA and Mexico. Taking into account the fact that the average price of 1 kg of honey on the world market is \$2, Uzbekistan annually produces it for \$10 million. Unlike all developed and most other countries of the world, we almost completely provide ourselves with our own honey, and the volume of its production has not declined for more than 10 years. Revenues from honey exports are an important source of funding for beekeeping in many countries, and exports often turn out to be much more profitable than

selling this product on the domestic market. According to the FAO, in the early 1990s, our country annually exported about 300 tons of honey. By the end of the decade, exports were halved and, apparently, remain at this level until now (132 tons were delivered to the USA in 2003 alone). This is 0.3% of the honey we produce. Of the three dozen honey powers, each of which produces more than 1 thousand tons of the product, Uzbekistan is the only one who exports it to salt in negligible quantities. The main reason for this situation is the low quality of the product, or rather, non-compliance with international standards.

The procedure for the transportation and placement of honey bees in the Republic of Uzbekistan has been developed and implemented, according to which, during the period of honey collection by bees, at the request of the association, beekeeping farms - members of the association are provided free of charge with the lands of the forest fund, protected natural areas (with the exception of state reserves protected zones of biosphere reserves), mountain and foothill zones, natural pastures, as well as agricultural land. Developed and amended the Administrative Code on falsification of honey, which, when considered by the Cabinet of Ministers, was expanded to include all food products and industrial products produced in the republic. Work is underway to improve standards for beekeeping products, introduce international standards and enter Uzbekistan into the Interstate Committee for standardization of beekeeping products.

Materials. During the functioning of the Association of Beekeepers, the export of bee products has significantly increased - the export of bee packages has increased by a quarter, the number of which amounted to 207 thousand pieces, the export of honey has increased by more than 20 times, and the total foreign exchange earnings have exceeded one million dollars, which is higher than the previous period by a quarter. Preliminary forecasts show an increase in exports of bee products for 2019. More than 17 thousand tons of sweet products were delivered to customer of Uzbekistan in 2018, the production of honey per capita reached 0.5 kg. For the first time in the history of Uzbekistan in 2019, the technology of pollination by bees was introduced into the agricultural technology of crops. In the Samarkand region, in the Jambai and Bulungur regions, horticultural farms and beekeepers have signed contracts for the pollination of cherries, apples, plums, pears on an area of 1,500 hectares with the involvement of 7,500 bee families.

Results and discussion. During the entire flowering period, the bees were evenly placed in the gardens in groups of 5 bee colonies for the purpose of full pollination. The predicted yield of orchards, according to agronomists, exceeded all expectations. The expected increase in garden production is several times higher than the cost of transporting bees and paying beekeepers for pollination.

Table 1.
Comparative efficiency of bee species in the apiaries of the farms Kashkadarya region.

Bee breeds	Average gross honey yield, kg
<i>Central Russian</i>	25.6
<i>Carpathian</i>	35.7
<i>Caucasian</i>	31.2
<i>Local bees</i>	26.5

As we can see, the Carpathian and Caucasian bee colonies have almost the same honey productivity. Families of Carpathian bees collected honey 15% more than Central Russian ones, and 13% more than gray mountain Local bees ones. The table is statistically significant. A similar pattern was observed for the wax productivity of the Carpathian bee colonies. Bees of all breeds have great potential for collecting honey, and in the most favorable conditions for a particular breed, these opportunities are realized especially effectively.

Of decisive importance for the development of beekeeping is its forage base, which is understood as the reserves of nectar and flower pollen available to bees during the flowering period of wild and cultivated honey plants. When organizing the beekeeping fodder base, it is recommended to ensure: the creation of a flower conveyor; maximum use of the productivity of wild and cultivated honey plants with the lowest labor and cost.

The amount of bee products received does not fully satisfy the needs of the country's population, and the existing number of bee colonies does not provide full pollination of agricultural crops, taking into account the full coverage of crops, according to the calculations, it is necessary to have at least 2 million bee colonies. An important role in solving the issues of increasing the number of bee colonies and increasing their productivity is given to the preservation of beekeeping breeding resources. Currently, most calculations of the economic efficiency of beekeeping are carried out without taking into account the full cost of produced honey, pollen, venom, only partial capital investments in the purchase of hives, inventory and equipment are taken into account, and the payback of material and labor costs is determined from the cost of sold honey.

Based on the average per capita consumption of honey in Uzbekistan by the population per year - 400 - 450 g, or about 1 g per day, and the minimum useful for humans - 25-55 g per day, the maximum potential increase in production is possible by 25-40 times, or up to 9-20 kg per person per year. Due to its climatic conditions, Uzbekistan will never produce the amount of sugar that it needs for consumption. And the addition of honey can be increased.

At the same time, we consider it necessary to calculate the forecast for the number of bee colonies, taking into account the crops of pollinated crops and trends in their change (Table 2)

Determining the honey potential of Uzbekistan showed that up to 2 million families with a commercial productivity of 25-35 kg of honey can be kept in the country. For complete pollination of entomophilous crops, about 2.5 million bee colonies are required in the presence of 1 million. In Uzbekistan, there is packaging in small containers for sale: souvenir kegs, plastic jars, glass kegs and glass jars of various sizes. This packaging looks very successful, but it has many flaws. Honey in such a container becomes 3 or even 5 times more expensive than

market honey and, most importantly, it loses its natural qualities, it cannot be used for medicinal purposes, many jars completely lack enzymes and hormones.

Table 2.
Recommended number of colonies for crop pollination.

Seeding culture and planting	The norm of bee families per 1 ha, hives	Yield increase from pollination by bees, %
<i>Sunflower</i>	0.6—1.0	45—50
<i>Mustard, rapeseed</i>	0.4—1.0	30—55
<i>Alfalfa</i>	1.5—10.0	45—65
<i>Pome gardens</i>	1.5—2.0	30—50
<i>Fruit gardens</i>	2.0—3.0	40—60
<i>Melon and Watermelons</i>	0.4—0.5	30—165
<i>Cucumbers in greenhouses, per 1000 m square</i>	1.0—1.5	250—300
<i>Cucumbers in the open field</i>	0.5—1.0	15—30

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Taking into account the negative properties of the technology used for preparing honey for sale and packaging, a method is proposed for preparing it for sale in small containers without violating its valuable biological properties. For this, a cheaper material (container) was proposed so that honey does not become much more expensive during packaging, heating with a microwave without destroying enzymes and hormones. Used two-layer film bags are much cheaper than glass containers, more transportable, safe during transportation and disposal.

Conclusion. Increasing the productivity of beekeepers and reducing the cost of bee products is achieved in two ways: a significant increase in the income of the bee farm, high collections of honey, wax, the organization of new bee colonies, the withdrawal of a large number of queens for sale and obtaining other products from bees (bee milk, poison, propolis) and reduction of labor, materials and other costs per unit of output. The greatest increase in the productivity of the beekeeper is achieved in the first way - by increasing the collection of honey and wax from each family of bees, by using a system of improved care and maintenance, by introducing the achievements of science and beekeeping experience. On the farm, it is advisable to use the most effective techniques and methods of working with bees, which increase the productivity of the beekeeper and thereby increase the profitability of beekeeping. The main directions for improving the organization of beekeeping:

- the correct placement of beekeepers and assistants at the farm department, assigning the number of families to them in accordance with the working conditions and the preparedness of the workers.
- drawing up, together with the beekeepers, a plan for the farm as a whole and for each apiary separately, and discussing with the beekeepers the techniques and

methods for their best implementation.

- distribution of food stocks, hives, inventory and materials among departments in accordance with the tasks and characteristics of the state of each department.

- quality control of the work of beekeepers, proper record keeping and reporting in the apiary.

- accounting for the products received at each branch of the farm, by each worker of the apiary. Presentation for special encouragement of the best beekeepers, innovators of production and the imposition of penalties on those who were dishonest in their duties

- organization of technical training for beekeepers and their assistants. Implementation of the achievements of beekeeping science and experience in all departments of the farm.

- organization of measures to improve the food base for bees, selection of places for migration for honey collection and pollination of entomophilous agricultural plants.

The growth in the profitability of apiaries largely depends on the structure of production, when bee families receive not only traditional products: honey and wax, but also bee bread, propolis, bee venom, royal jelly pollen, homogenate of drones and bees, etc. The best practice of foreign countries and individual apiaries in Uzbekistan shows that with the complex use of families, the share of honey and wax in the cost of marketable products is reduced to 12%, and other, more expensive products, respectively, increase.

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