

THE IMPORTANCE OF A BEEKEEPING TO OUR FOOD SUPPLY

A.Suvanov, B.Sultanov "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University

Abstract

The development of beekeeping and the results of research, the role of the industry in ensuring the country's food security is determined. Deficiency of bee colonies on pollination of entomophilous crops negatively affects their productivity. This study gives some the solution to the problem.

Keywords: food security, pollination, beekeeping development.

Introduction. The basis of human life support is the food security of the country, socially aimed at creating conditions that guarantee a decent life for people. Ensuring food security is recognized in Uzbekistan as the most important national priority and is enshrined in the Food Security System. The most important segment of agricultural production is crop production. It should be remembered that many agricultural crops are entomophiles, requiring pollination. Thanks to the "European" honey bee (*Apis mellifera*), the world produces 1.6 million tons of honey per year. Honeybees have been around for millions of years and are responsible for pollinating over a third of our food supply and 90% of wild plants. Pollination is key in the reproduction of many plants. It is bees in modern conditions that perform the function of an "organized" pollinator. Unfortunately, many other species of wild pollinating insects have been destroyed due to the widespread use of chemical plant protection products.

In Western Europe, there are about 14 million bee colonies, or three colonies per 1 km². Honey "millionaires" with more than 1 million bee colonies are Germany, Spain, Poland, France, Greece, Turkey. At the same time, beekeeping in European countries is mainly carried out by amateur beekeepers with small apiaries of 5–50 bee colonies. There are very few industrial apiaries for 250–500 bee colonies, and they are concentrated in the USA, Canada, Brazil, and China.

Uzbekistan, according to statistics, is among the thirty leading countries in the world in terms of the number of bee colonies. The main indicators of the country's beekeeping industry are presented in Table 1.

According to the results of the Uzbekistan agricultural censuses, the number of bee colonies continues to increase in bee farms and households, which today are the main producers of bee products.

Table 1

Beekeeping in Uzbekistan

Index	2016	2017	2018	2019
Number of bee colonies, thousand units	565	674	754	846
Number of bee farms and households, unit	11989	13188	14018	14412
collected honey, tons	12069	15366	17042	19100

Materials and methods. The aim of the study was to study the contribution of beekeeping to ensuring the country's food security by increasing the efficiency of pollination of entomophilous crops. The universal dialectical-materialistic method of cognition was used for research. When studying the topic, the methods of comparative analysis, comparison, induction and

deduction were applied.

Results and discussion. In the last 15 years in many countries there have been cases of death of bees and a decrease in their number. This phenomenon is of concern to the world community. A 2011 UNEP (United Nations Environment Program) report, "The global collapse of bee colonies and other threats to pollinating insects," noted that of the 100 most important crops that provide 90% of the world's food, 71 need pollination by insects. Along with food crops, insects pollinate plants used to produce biofuels (canola, oil palm, rapeseed), plant fibers (cotton), medicines, livestock feed, and construction materials.

In recent years, the role of bees as the main pollinator of entomophiles agricultural crops has significantly increased. This requires moving the apiary to flowering honey plants almost every 2-3 weeks. At the same time, it was found that for effective pollination it is necessary that the bees visit each flower several times. For example, sunflowers require 6–8 visits, while cucumbers require 15–20 (Table 2).

In the Southern Districts, with its unique natural and climatic conditions, bees participate in pollination of crops from May to August-October. It is in this region that a large number of entomophilous crops are cultivated. Under the main honey crop - sunflower - 1.6 thousand hectares. In addition, more than 27% of the area under fruit and berry plantations, which also need pollination, is concentrated in this zone. Most of the gardens are in the Samarkand territory (25.0 thousand ha) and the Kashkadarya Region (17.4 thousand ha). At the same time, garden plantings are constantly growing under the import substitution program due to the high suitability of the climate and land for garden plantings, as well as due to the economic feasibility and social significance of fruits in people's nutrition.

Table 2

The number of bee colonies for pollination of 1 ha of crops

Crop	Number of bee colonies per 1 ha
Melons	0.2–0.5
Sunflower	1–2
Cucumbers in the open field	0.5-1
Apple, pear, plum, raspberry, large-fruited gooseberry varieties	1-2
Cherry	2.5–3
Currant, small-fruited varieties of gooseberries	3-4
Cotton	5–6
Alfalfa	8-9

For high-quality pollination, it is very important that by the beginning of the flowering of honey plants, the apiaries are in close proximity to the flowering honey plant. In conditions of intensive farming, prompt delivery of bee colonies and in a short time is required. At the same time, it is important that the bees are brought exactly at the beginning of flowering, when there is an intensive release of nectar.

Pollination activities bring farmers and beekeepers an income many times greater than the profit from the sale of bee products. This is confirmed by numerous data of foreign and Russian beekeepers. The effectiveness of bee pollination is associated with the mass character of the honey bee, its high propensity and intensity to collect and accumulate nectar, as well as the ability to live in controlled conditions created by man. It should be noted that in recent years it has become obvious to farmers that pollination of sunflowers and orchards increases yields by 15–35%. Therefore, beekeepers for placing bees for pollination are paid 0.5-1 million sums for 15–20 days of work with the strength of colonies of 9–10 hives. Such conditions interested beekeepers and gave grounds for preventing a decrease in the number of bees in the Southern region. Gardeners for the delivery of bees for pollination give 25–30 kg of apples for each bee colony with the possibility of storing fruits in the refrigerators of the enterprise. As a result of pollination by bees, the yield of entomophilous crops increases from 15 to 35%, and it is impossible to replace the cross-pollination of plants with any other agro-technological method. According to many researchers, at present, there are only about 0.26 bee colonies per 1 hectare of entomophilous crops, which is 3–4 times less than the required.

Among the main threats to bees in modern conditions are systemic insecticides containing neonicotinoids and other dangerous substances that cause loss of orientation and memory in bees and destroy their nervous and immune systems. Neonicotinoids, which are already banned in a number of countries, including the UK, have a particularly harmful effect. The deterioration of the environment has led to the fact that the distance at which bees are able to recognize the aromas of flowers has decreased compared to the 19th century. from 800 to 200 m. In addition, diseases and the Varroa mite, which has spread throughout the world, except Australia, cause great damage to beekeeping.

Pollinator shortages are now a daily reality in a number of countries. For example, in the United States, the demand for pollination has increased 5 times over the past half century, while the number of bee colonies has halved. Pollinator shortages are already a daily reality in some countries. So, in the Chinese province of Sichuan, farmers are forced to pollinate gardens manually with brushes.

The lack of bees is also felt in the Russian Federation,

which negatively affects the yield of food and industrial crops. This problem is especially acute in the zones of intensive agriculture, which include the south of Russia. Bee pollination has always been considered an effective agricultural technique that cannot be replaced by anything. Its importance has increased many times in the conditions of industrial crop production.

Industrial crop production requires industrialization in beekeeping as well. In fact, large arrays of entomophilous cultures require a simultaneous large number of bees for high-quality pollination. This can be ensured by the rapid delivery of large apiaries or by cooperating small apiaries. But in any case, the prompt delivery of the required number of bee colonies to nectar-pollen-bearing locations can only be ensured if nomadic beekeeping is transferred to new principles. Requires transformation of beekeeping equipment. The decisive role in this belongs to mobile honey-pollination complexes, which exclude labor-intensive work on loading and unloading beehives and their delivery to flowering honey plants.

In addition to technical innovations, it is necessary to revise the technological methods used in beekeeping. In particular, the issue of increasing the number of bee colonies in the spring period is acute. To do this, it is necessary to apply the technology of artificial insemination of queens and use stimulating top dressing in the spring, and, most importantly, create reproducers for the distribution of bee packages of zoned bee species.

In our country, there are practically no stationary and mobile points for pumping honey, and this process, as you know, takes beekeepers up to 50–60% of all labor costs. Along with technological problems, there are a number of organizational and legal issues that need to be resolved. In particular, there is no consistency between farmers and beekeepers. In some cases, this leads to the fact that the chemical treatment of agricultural crops causes the mass death of bees, and, as a rule, it is almost never possible to find the culprits. In many countries of the world, growers enter into contracts for the supply of bees for pollination, stipulating payment for this work. To be fair, it must be said that we already have such agreements.

Taking into account the role of bees in the pollination of agricultural crops, the issue of supporting beekeeping at the state level should be considered, and economic measures should be developed and proposed to the government to support a socially significant industry.

Conclusion. Bee pollination is an integral element in the system of industrial agricultural crops. The shortage of bee colonies for pollination of entomophilous crops adversely affects their productivity. The transformation of beekeeping into industrial production through the use of modern beekeeping technologies and the massive use of bees for pollination will increase crop yields by 15–35%.

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