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## UKRAINIAN BEEKEEPING AS A COUNTRY BRAND AND AN ELEMENT OF NATIONAL IDENTITY

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brand

The article is devoted to the study of the beekeeping industry in Ukraine. It defined the concept of «beekeeping», as well as considered the main functions of the industry. The number of existing beekeepers in Ukraine and the total number of bee colonies are analyzed. The peculiarities of honey production and volumes of honey exports in thousand tons as of 2020 in Ukraine are compared with countries such as America, Turkey, Argentina, China, Uzbekistan and Mexico and Ukraine's place in world honey exports, its volumes and dynamics are determined. growth, analyzed the main importers of Ukrainian honey, including the EU, America, Turkey, Israel and others. The need to increase quotas on honey exports to Europe has been determined, based on data on Ukrainian honey exports in early 2022. Alternative honey products were analyzed, and the importance of bee pollination of plants was determined. The main problems of the industry as a whole, as well as problems that arose during the war, including the disunity of beekeepers, mass mortality of bee colonies, imperfect legal framework and lack of harmonization with world directives, outdated technology, lack of education, high money and physical losses due to hostilities. It was concluded that it is necessary to create a brand of Ukrainian honey, as well as increase profits through value added.

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## УКРАЇНСЬКЕ БДЖІЛЬНИЦТВО ЯК БРЕНД КРАЇНИ ТА ЕЛЕМЕНТ НАЦІОНАЛЬНОЇ ІДЕНТИЧНОСТІ

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### **Ключові слова:**

мед, бджільництво,  
бджолосім'я, галузь, експорт,  
квота, агровиробники,  
реєстр пасік, вуликотерапія,  
бренд

Стаття присвячена дослідженню галузі бджільництва в Україні. В ній було визначено поняття «бджільництво», а також розглянуті основні функції галузі. Проаналізовано кількість існуючих пасічників в Україні та загальну кількість бджолосім'ей. Порівняно особливості виробництва меду та обсяги експорту меду в тис. тон станом на 2020 р. в Україні в порівнянні з такими країнами, як Америка, Туреччина, Аргентина, Китай, Узбекистан та Мексика та визначено місце України в світовому експорті меду, його обсяги та динаміку зростання, проаналізовано основних країн імпортерів українського меду, серед яких країни ЄС, Америка, Туреччина, Ізраїль та інші. Визначено необхідність збільшення квот на експорт меду до Європи, на основі даних про експорт українського меду на початку 2022 року. Проаналізовано альтернативну продукцію із меду, а також визначено важливість запилення бджолами рослин. Розглянуто основні проблеми галузі в цілому, а також проблеми, які виникли під час війни, серед них роз'єднаність пасічників, масова смертність бджолосім'ей, недосконалість нормативно-правової бази та відсутність її гармонізації із світовими директивами, застарілість технологій, недостатній рівень освіти, великі грошові та фізичні втрати через воєнні дії. Зроблено висновок, щодо необхідності створення бренду українського меду, а також збільшення прибутку, за рахунок доданої вартості.

### Problem statement

On average, one Ukrainian consumes about 0.8–1.2 kg of honey per year, an American – 0.76 kg, residents of EU countries – 0.65 kg, residents of China – 0.25 kg. Ukraine is a supplier of large volumes of honey worldwide and has a wide potential. But it should be noted that the industry is not given the necessary attention, outdated methods are used, most beekeepers are amateurs with a small number of bee colonies. The industry needs to reform, identify and address weaknesses and develop a development plan. In addition, the industry is losing its potential due to the Russian-Ukrainian war in the country.

### Recent research and publication analysis

The issues of beekeeping development in Ukraine were studied by such scientists as Fedoruk R.S., Kovalchuk I.I., Kovalska L.M. [8], Gavranyak A.R. [9], Adamchuk L.O. [11].

### The purpose of the article

To consider the state of the beekeeping industry in Ukraine, to compare with other countries exporting honey, to determine the problems that the country has, to outline ways of development.

### The main material representation

Beekeeping – a branch of agricultural production, the basis of which is the breeding, keeping and use of bees for pollination of entomophytic plants for agricultural purposes and increase their yields, production of food and raw materials for industry [1]. The main functions of the beekeeping industry are:

- 1) breeding, keeping and use of bees for pollination of entomophytic plants for agricultural purposes in order to increase their productivity;
- 2) breeding, keeping and use of bees for wild pollination in order to preserve ecosystems and biodiversity;
- 3) preservation, reproduction and increase of forage lands for bees;
- 4) production, processing and sale of beekeeping products;
- 5) the use of beekeeping products, including live bees, for the health of the population;
- 6) the use of bees as bioindicators of the environment;
- 7) provision of raw materials for food, cosmetics, pharmaceuticals, defense and other industries;
- 8) ensuring self-employment and development of rural areas; preservation of national traditions of beekeeping [2].

According to estimates, beekeeping in Ukraine employs about 400,000 people, the volume of honey produced ranges from 75 to 100 thousand tons of honey per year, the number of bee families – 2.6 million.

Ukraine produces several types of monofloral honey – from sunflower, buckwheat, canola, linden, white acacia. Mostly sunflower honey is exported, which is mostly obtained by beekeepers in the south of Ukraine.

In 2021, the Order of the Ministry of Economy «On some issues in the field of beekeeping» from. 19.02.2021 № 338., which introduced an electronic register of apiary

passports, this order was created to determine the number of beekeepers employed in this field, as well as the registration of bee colonies.

Prior to the adoption of this document, 851 passports and 42,054 bee colonies were registered in the Register of Veterinary and Sanitary Passports of apiaries. As of today, almost 43,500 passports and 2,236,144 bee families have been registered in the Register of apiaries.

Currently, the beekeeping industry is developing quite rapidly in Ukraine, but Ukrainian honey, although very popular, is still considered a raw material base, not a full-fledged product, its price on the foreign market is quite low. Most Ukrainian honey is supplied to the EU for processing (packaging) and not directly to supermarkets under Ukrainian brands. This is a loss of value added, as well as opportunities to promote quality Ukrainian products (Table 1).

Volumes of Ukrainian honey grew quite rapidly during 2012–2017, which was facilitated by stable demand for it on the world market, the devaluation of the hryvnia, low purchasing power of the population, trade preferences of the European Union and other factors (Fig. 1).

In 2018, there was a sharp decline in honey exports due to increased world honey yields. In 2019, exports began to grow again, and in 2020 reached a record 80.8 thousand tons, most of which were sent to EU countries. This was largely due to a 40% reduction in honey production in the EU in 2020 due to weather conditions and other adverse factors, as well as the desire of Europeans to create honey reserves in the context of the coronavirus pandemic.

In 2021, exports fell again, with the main factors influencing the decline in exports being an increase in demand in Ukraine in the pandemic and rising retail prices for honey, which encouraged many beekeepers to sell their products in the domestic market.

As of January 18, 2022, Ukrainian companies have closed the annual quota for duty-free honey exports to the European Union.

Ukraine is among the six leaders of honey-exporting countries in the world ranking, taking 5th place. In general, the honey market in Ukraine has an export orientation.

As shown in Figure 2, Ukraine exports most to EU countries, the United States, Switzerland, Japan, Turkey, Morocco, Israel, Iraq, Libya and Saudi Arabia.

The main share of Ukrainian honey exports goes to EU countries, mostly to Germany, Poland, and after them honey goes to the United States, Turkey and other countries. Significant increase in honey exports to the EU was facilitated by the signing of the Association Agreement between Ukraine and the EU, according to which the quota for duty-free export of Ukrainian honey initially amounted to 5 thousand tons, and from 2020 increased to 6 thousand tons. However, Ukrainian exporters use them fairly quickly.

In addition to honey, beekeepers can also produce and sell products such as flower pollen, which bees bring to the hive, propolis, honey wax, as well as barberry and royal jelly.

In addition, bees are an important source of pollination for crop production. Due to the pollination work of bees, the yield of entomophilous crops increases by 30–60%,

Table 1 – Features of honey production in different countries

Country	Features of honey production	Volumes of honey exports in thousands of tons as of 2020
America	Beekeeping is concentrated and specialized – some beekeepers breed bees but do not receive honey, others – consume honey and bees do not reproduce, others – pollinate crops, do not multiply bees and do not produce honey. In 2021, almost half of the bee families lost due to the killer bee.	196,6
Turkey	Holds the second place in the world after China in terms of honey production. In terms of average per capita consumption of honey (1.3 – 1.4 kg per year) is one of the world leaders. In 2020, 82,000 beekeepers and 8.2 million bee families were registered. The honey base allows to increase honey production, but climate change and the use of pesticides to treat crops from pests and diseases are causing increasing damage to beekeeping.	114
Argentina	One of the largest producers of honey and its exporters, has a third of bee families in South America. Production of commercial honey by one bee family exceeds 50 kg, but in industrial apiaries – at least 70 kg. Argentina supplies between 15,000 and 25,000 tons of honey a year to the international market, mainly from Japan, Germany, England, Italy and other European countries.	71,5
China	200-250 thousand tons of honey, 1500 tons of royal jelly, 3000-3500 tons of pollen, 2500 tons of wax and 300 tons of propolis are produced annually. 50% of honey produced enters the domestic market. One of the major problems of Chinese beekeeping is the reluctance of young people to go into this industry, which can earn at best 8.2-16.4 thousand dollars. for a year. It is estimated that half of the 400,000 tons of honey supplied to the Chinese market is counterfeit, with a significant portion being one hundred percent counterfeit.	53
Mexico	There are more than 2 million bee families. More than half of the bees are concentrated in the hands of rural beekeepers, who produce half of the total honey, and 300 industrial farms. Subtropical climate and rich fodder base contribute to the development of beekeeping. Mexicans have domesticated the African killer bee by crossing it with local bees, and it now produces a lot of honey.	22,6
Uzbekistan	Beekeeping receives significant support from the state. At the end of each month, the Prime Minister or his deputy holds a national conference call on beekeeping. Heads of regional and district administrations, beekeepers and specialists take part in such meetings. The honey market in Uzbekistan is protected by a high import tariff of 100%. The needs of beekeeping in wax are fully met by the country’s seven wax shops. However, there is a shortage of wax due to the fact that more than 60 tons of wax are exported annually with bee packages.	21,4

Source: Compiled by the author based on [4–6]

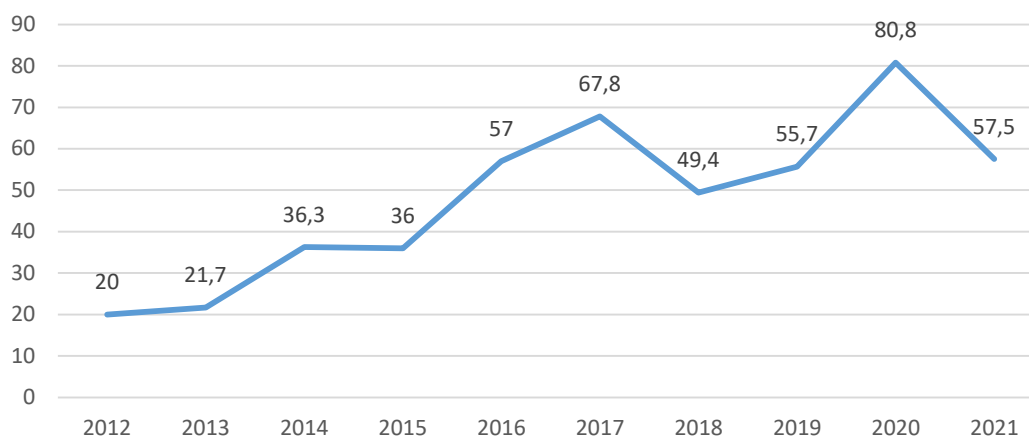


Fig. 1 – Exports of Ukrainian honey in 2012–2021, thousand tons

Source: Compiled by the author based on [4]

the quality of fruits improves. Bees, collecting nectar and pollen from flowers, involuntarily make cross-pollination, transferring pollen from one plant to another, which significantly increases the yield of these plants. The benefits of pollination of bees and the increase in yield of the crops they visit are estimated at 10–15 times more than the profit from honey and wax. For example, when buckwheat is pollinated, the yield increases by 40–60%, or by 5–7 c / ha [8].

The analysis of indicators of efficiency of work of branch of beekeeping in Ukraine has shown the following problems:

1. Separation of beekeepers. In Ukraine, there are many unions and associations of beekeepers that operate separately, and there should be a single main organization that could coordinate the actions of beekeepers, provide protection against the ill health of unscrupulous farmers, and so on. This problem arises mainly due to the fact that

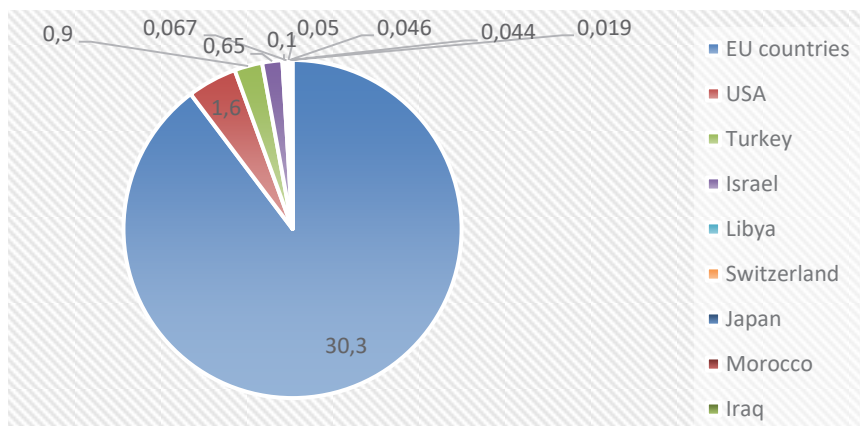


Fig. 2 – Exports of Ukrainian honey, UAH million

Source: Compiled by the author based on [7]

most apiaries are amateur and such beekeepers are not motivated to join unions.

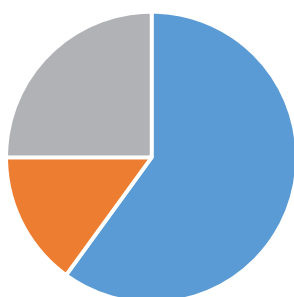
According to Fig. 3. about 60% of honey is produced in amateur apiaries, where the number of bee colonies does not exceed 50, the share of professional producers serving more than 200 bee colonies accounts for 15% of all honey, 25% provide medium beekeepers.

Given this structure, in the medium term, Ukraine, which has rapidly increased its exports, risks losing production just as quickly.

2. Mass mortality of bee colonies. Due to the pesticides that farmers use to treat their plants, many bees begin to get sick and die en masse.

According to the Law of Ukraine «On Beekeeping» of 22.02.2000 № 1492-III. agricultural producers should use only drugs entered in the state register of pesticides and follow the recommendations for their use so as not to harm beekeeping. But quite often these requirements are not met because there is no effective control.

Collecting nectar, the beekeeper receives from 50–200 UAH / 1 hectare. However, in case of bee poisoning, it is possible to prove one’s rightness and receive compensation from the farmer only with the prior registration and availability of a veterinary passport. Of course, after the death of the bee colony, the beekeeper will be forced to buy a new one and this can also be a problem.



■ Amateur apiaries ■ Professional apiaries ■ Medium apiaries

Fig. 3 – Sales of honey in terms of producers

Source: Compiled by the author based on [9]

As can be seen from Fig. 4 during 2018–2020, the average cost of bee packages in the western and eastern parts of Ukraine decreased, but due to the coronavirus pandemic and increased demand over the past year, prices have increased. The difference in the cost of bee packages in the western and eastern parts of Ukraine differs due to the volume of demand and the number of bee colonies located on them.

3. Imperfection of the regulatory framework and lack of its harmonization with global directives. Regulatory activity in the field is largely provided by the Law of Ukraine «On Beekeeping» and other regulations, including «Rules of import and export of bees and beekeeping products to Ukraine», approved from 02.08.2013 № 478/88, Registration Procedure apiary «, approved from 19.02.2021 № 0281–21,» Procedure for issuing the veterinary-sanitary passport of the apiary «, approved from 19.02.2021 № 0282–21, etc. However, the package of normative documentation concerning product quality and its control needs to be finalized, there are no norms of modern production technologies approved at the state level [11].

Therefore, the Order of the Ministry of Economy № 338 «On some issues in the field of beekeeping» of February 19, 2021, greatly simplifies the registration of apiaries and issuance of veterinary passports, introduces an official register of apiary passports, creates opportunities for supervision of honey producers, introduces effective and modern instructions for the prevention and establishment of the fact of bee poisoning by plant protection products, regulates the issue of nomadic apiaries in order to reduce the risk of bee poisoning [12].

4. Obsolescence of technologies. Currently, Ukrainian beekeepers are quite conservative and do not use the latest technologies that would greatly simplify their activities. But today there are unique innovative technologies, such as ApisProtect, which helps beekeepers increase the productivity of hives. The startup uses IoT technology to monitor hives. Through machine learning, the platform collects data from various sources on bee colonies, tests for diseases, provides reports, aggregate and anonymous

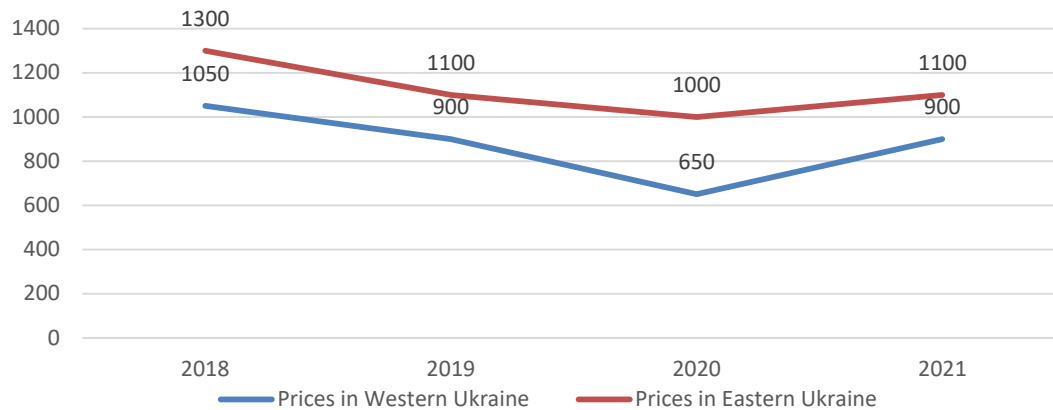


Fig. 4 – The cost of bee packages in 2018–2021, UAH

Source: Compiled by the author based on [10]

data collected from hives around the world, and sends suggestions to beekeepers to improve the health of bee colonies.

5. Insufficient level of education. In modern Ukraine, training of beekeeping specialists is carried out in several higher and vocational schools. However, the interest in education in the field is growing significantly, so there is a need to develop and implement appropriate educational and methodological complexes and implement them on the basis of modern educational and scientific organizations.

6. The main problem of today for Ukrainian beekeepers is the war with Russia. According to preliminary estimates, the losses of bee colonies in the North (Kyiv, Chernihiv), East (Slobozhanshchyna) and South (Kherson, Mykolaiv regions) of Ukraine may be up to 30%. In addition to bees, hives, equipment and production lines were lost. Due to the war, some beekeepers were forced to leave their homes – so even if the apiaries survive, bee colonies will be left without the necessary spring measures (feeding, expansion), which, in turn, will negatively affect their further development.

With the start of the war and the arrival of Russian troops, Ukraine lost access to some territories. Therefore, due to active hostilities, shelling, occupation pressure and problems with logistics, beekeepers from Kherson and Luhansk regions, as well as most of Zaporizhia, Donetsk and Kharkiv regions will not be able to work yet. If we consider only these regions, Ukraine will minimally lose the honey harvest from 20% of officially registered apiaries.

In addition, even in areas where there is no fighting, the work process will also be complicated, so methods of maintaining and developing the industry, as well as increasing profitability, should be considered.

One of them is the transformation of Ukrainian honey into a national brand, and the other is the manufacture and sale of value-added products.

Currently, there is a trend in Ukraine for everything Ukrainian, beekeepers could take advantage of this and start selling, for example, honey not just as raw material, but as a finished product, packaged in banks. For example, sunflower honey has high marks, China considers it the most valuable of all types of honey, so the demand for it is quite high.

As for value-added products, it is worth involving the tourism industry and developing rural tourism to develop such an area as beehive therapy, which helps to relax and heal the nerves, which in this situation is quite relevant for Ukrainians and interesting for foreigners. Also, products made of honey and related products, including drinking and whipped honey, cosmetics and medicines, can become business cards of Ukraine today, given the growing interest of the population in eco-products.

### Conclusions

Thus, beekeeping is a very important industry for Ukraine. Currently, it employs about 400 thousand people, although the vast majority of beekeepers do their job as amateurs. Due to the difficult political and military situation in the country, beekeepers are forced to work in new conditions, many beekeepers have lost their apiaries, sowing is reduced, ie bees have less access to flowering plants, and high mortality due to shells or debris, disease, etc. Beekeepers themselves cannot solve the problem completely, although they continue to work in modern conditions. As the Ukrainian nation is historically associated with beekeeping, Ukraine must focus its efforts on the revival and sustainable development of this industry, increase the value of Ukrainian honey and create a so-called brand of our honey and derived products.

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