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BEEKEEPING SUPPORT IN THE EUROPEAN UNION COUNTRIES

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Abstract

The analysis and support structure of the beekeeping sector in the European Union countries was analyzed. The level of support for this sector of agriculture in the years to come increased and in the years 2017-2019 is 72 million EUR per year. The amount of support beekeeping depends mainly on the number of hives. The average value of support for bee colony in most countries ranges from 4.35 to 4.63 EUR per year. The amount of support expressed as the equivalent of beekeeping honey indicating little relevance of this action, since the value of the support is equal to the EU average of 0.65 kg multiflorous honey, that varies from 0.3 to 1.33 kg.

Key words**:** *beekeeping, support, national apicultural programmes*

INTRODUCTION

Beekeeping plays an important role for the European Union's economy and environment. In addition to bee products such as honey, bee wax, pollen, propolis, royal jelly, bees are responsible for pollination of about 80% of plant species. Pollinating insects, especially honey bees, account for about 35% of the world's crop production [9]. The global crop pollination rate was estimated at 153 billion EUR a year and 14.2 billion EUR in the EU [4]. In turn, Leonhardt et al. (2013) estimate the value of insect pollination in EU countries at 14.6 billion EUR annually [5]. Morse and Calderone (2000) demonstration that in the United States this value increased from 9.3 billion USD in 1989 to 14.6 billion USD in 2000 [7]. In England crops pollination value was estimated at over 918 million GBP in 2007 [1]. In Poland, based on data from 2004, the value of pollination of major entomophilous plants was estimated at 720 million EUR [10]. In turn, for 2012, the value of major entomophilous crops was estimated at over 825 million EUR [6].

Beekeeping is a specific human activity, because its effects are consumed not only by beekeepers but also by farmers and the community. This is due to the influence of bees on the yield and quality of crops, as well as on biodiversity. This points to the need to support beekeeping from external resources, and since 1997, one of the objectives of the Common Agricultural Policy (CAP) has been to improve the situation in the beekeeping sector. The forms of support for this sector of agriculture have changed and are currently (2017) governed by Regulation (EU) No 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organization of agricultural products and repealing the Council Regulations EEC No 922/72, (EEC) No 234/79, (EC) No 1037/2001 and (EC) No 1234/2007.

The aim of the work is to determine the size and direction of beekeeping support in the EU countries and to try to evaluate it. The compilation of the value of support in each country and the conversion of this size to the bee family was compiled.

MATERIALS AND METHODS

In this paper were used data on beekeeping in the EU published by the European Commission and the literature on the subject. Simple statistical measures and linear trend functions were used to determine the relationship between the size of beekeeping support and the number of bee colonies. For calculations used in Microsoft Excel 2013.

RESULTS AND DISCUSSIONS

The beekeeping statistics in the EU countries indicate its development. The number of bee colonies in the EU increased from 13.6 million hives in 2008-2010, to more than 15.7 million in 2014-2016, ie. 15% (not included Croatia, which is a member of the EU since 1 July 2013). These changes were not the same throughout the Union. In the EU-15 countries this increase was 8%, while in the EU-12 almost 20%. However, in the six EU-15 countries (Belgium, Denmark, Germany, Ireland, Luxembourg, Finland) and two EU-12 countries (Bulgaria, Slovenia) there was at this time decline in the number of bee colonies from 2% to 29%. This indicates a great variety of changes taking place in this industry. In the rest of the EU, the number of bee colonies remained similar (Sweden, United Kingdom) or increased, with the increase in the three countries (Lithuania, Malta, Romania) by over 50% [2, 3].

The support of the beekeeping sector in the EU 2017-2019 is € 72 million per annum under the national support programs [2]. This is an increase of 9% over the corresponding program in 2014-2016. With a maximum of half of the disbursed funds could come from the EU budget and the other half from national budgets.

The amount of support beekeeping in the EU depends on the number of bee families. Four countries (Spain, France, Romania and Greece) with the largest number of bee families can use almost half of the funds from the beekeeping support programs (Fig. 1). The dependence between the value of beekeeping support in EU countries and the number of bee colonies is illustrated by the data presented in Figure 2.

By calculating the amount of support from bee keeping programs in the EU average, it can be said that in most countries it is close to and ranges from 4.35 to 4.63 EUR/beehive.

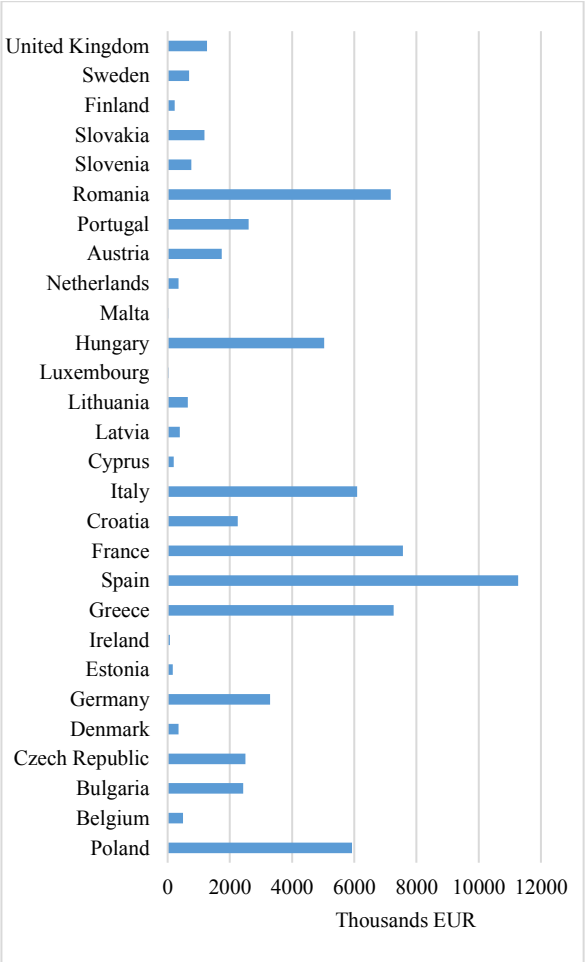

Fig. 1. Annual beekeeping support in the European Union countries in the framework of national beekeeping programmes in 2017-2019
Source: [2].

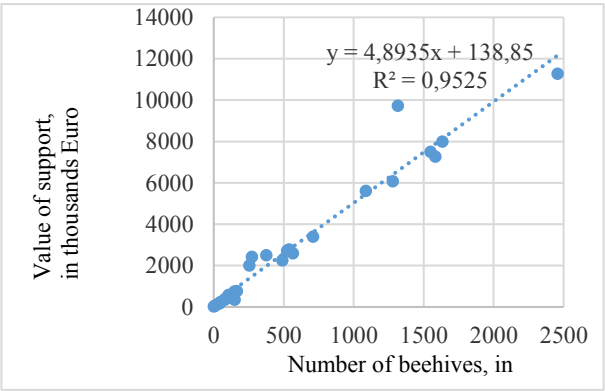

Fig. 2. The dependency between the level of beekeeping support and the number of bee colonies in EU countries
Source: own calculation based on [2, 3].

Only in Denmark and Estonia were these values lower (respectively 2.32 and 4.00 EUR/beehive), and in Malta the value of support per hectare was the highest among all countries and amounted to 5.3 EUR/beehive (Fig. 3).

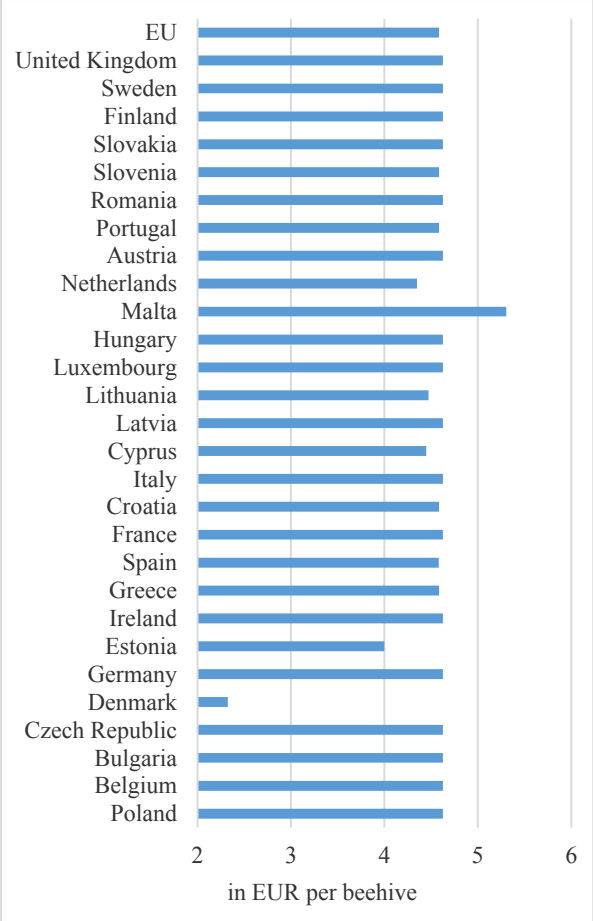

Fig. 3. The amount of beekeeping support in the EU in terms of bee colony
Source: see figure 2.

In addition to a significant amount of support it is also his destiny. As in previous years, the Member States were able to determine the allocation of funds for specific purposes. The following objectives were identified for which measures could be allocated:
a - technical assistance to beekeepers and beekeepers' organizations,
b - combining beehive invaders and diseases, particularly varroasis,
c - rationalization of transhumance,
d - measures to support laboratories for the analysis of apiculture products,
e - restocking of hives,
f - applied research programs,
g - market monitoring,
h - enhancement of product quality.
Member States were able to determine what proportion of the funds they intended to spend on specific goals. Therefore, in the various EU countries, the number of goals selected for implementation and their contribution to the national support amount was varied (Fig. 4). Only the Netherlands allocated all resources for one purpose, ie combating beehive invaders and diseases, especially varroasis. The other countries had a more diversified structure of spending support, and nine of them (Belgium, Croatia, Denmark, Germany, Hungary, Italy, Lithuania, Slovakia and Sweden) allocated funds for all the specified goals.

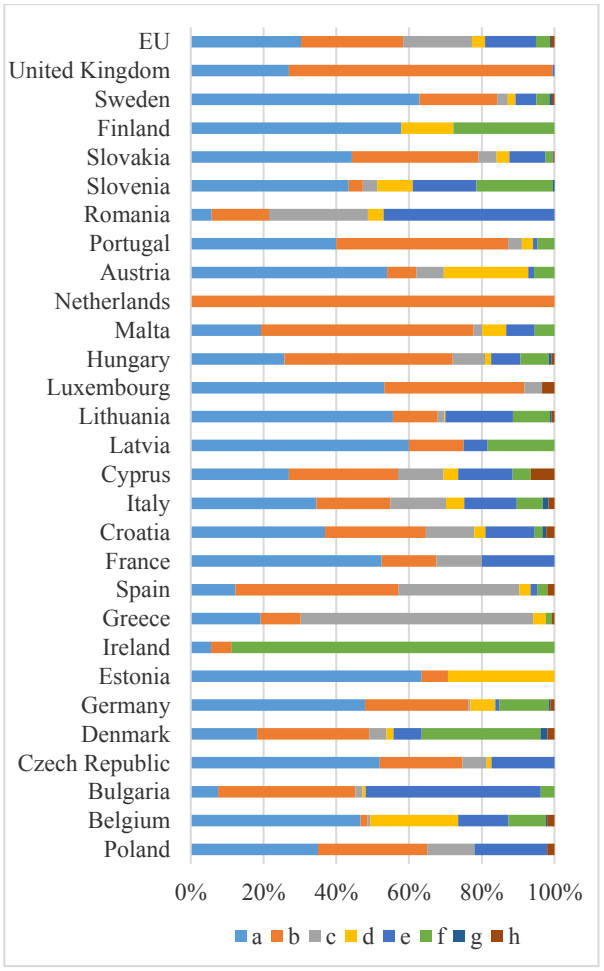

Fig. 4. The structure of beekeeping support in EU countries according to the purpose of support
Source: see Figure 2.

Diversification of beekeeping in the EU can also be seen in the prices of honey and its production costs in different countries. According to national apiculture programmes, the average estimated cost of producing one kilogram of honey in EU countries ranged from less than 2 EUR in the Czech Republic to 12 EUR in Malta. On average in UE countries, the cost of producing honey kilograms was estimated at 4.32 EUR. The cost of honey

production in the EU-15 countries was more than 20% higher than in the EU-12, which can be explained by lower production costs in this part of the EU.

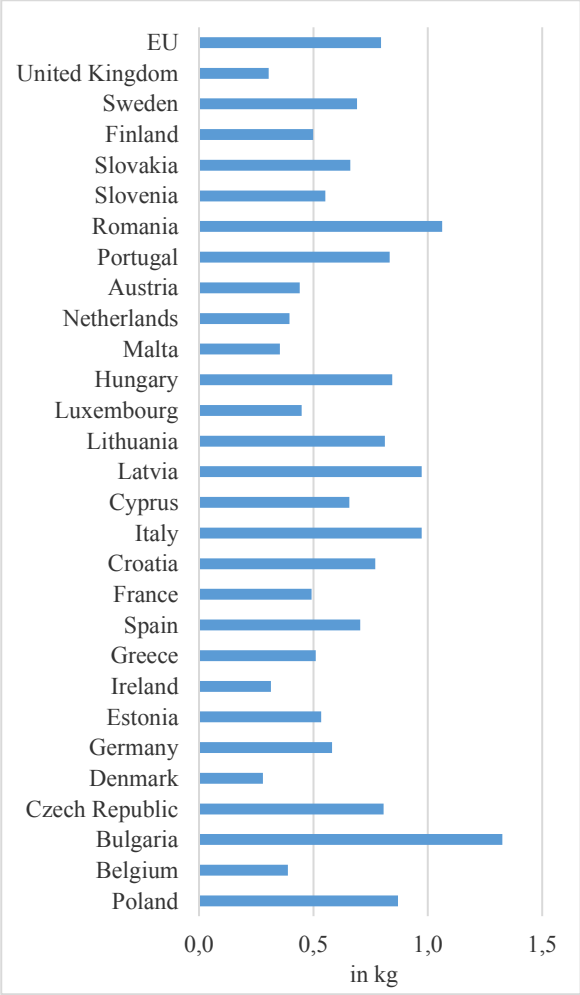

Fig. 5. The amount of support for the bee family, defined as the equivalent of multiflorous honey in the European Union countries (producer prices included)
Source: see Figure 2.

In the case of honey prices, there is a similar situation. Estimated honey prices at the side of production in the EU-15 were over 40% higher than in the EU-12 (9.4 and 6.6 EUR/kg respectively). It should also be noted that there is considerable variation within the groups of countries. In the EU-15 countries the lowest price was recorded in Italy (4.75 EUR/kg) and the highest in the United Kingdom (15.18 EUR/kg). In the EU-12 countries, the lowest average price of honey at the side of production was in Bulgaria (3.45 EUR/kg) and the highest in Malta (15 EUR/kg).

Such large price and cost diversification of apiculture in EU countries makes it difficult to determine the importance of beekeeping support. Therefore, the amount of support per one bee family was calculated and the amount of honey produced should be calculated to balance the amount of support. The average price of honey candy at the side of production in different EU countries was estimated.
The amount of support for one bee family in the EU is equivalent to 0.65 kg of honey (Fig. 5). There is a strong correlation between the price of honey and the amount of support expressed in kilograms of honey (Pearson's correlation coefficient -0.868). The highest value of support expressed by the volume of honey was characterized by Bulgaria (1.33 kg) and Romania (1.06 kg). Relatively high values of support were obtained in Latvia, Italy, Poland, Hungary, Portugal, Lithuania and the Czech Republic at the level equivalent from 0.8 to 1.0 kg of honey. In turn, the lowest support expressed in terms of honey was obtained in Denmark, United Kingdom, Ireland and Malta, the countries with high prices of domestic honey.

CONCLUSIONS

Beekeeping plays an important role in the economies of European Union countries. Its role, besides providing bee products, is primarily the pollinating of entomophilous plants. Bee pollinating is a kind of environmental service. Therefore beekeeping should be supported by external resources, including resources from the EU budget.
All EU countries participate in the beekeeping program. For the years 2017-2019, the annual amount of support is 72 million EUR per year. The distribution of resources among the Member States primarily takes into account the number of bee families. The average value of support for bee colony in EU countries was 4.58 EUR. In most countries the amount for bee stalk varies from 4.35 to 4.63 EUR. The value of support colonies converted into the equivalent of honey multiflorous set at a level equivalent to the value of 0.3 to 1.33 kg of honey.

The value of support for the beekeeping sector in the EU appears to be insufficient, especially considering the effects of pollinating bees. It is advisable to increase the amounts and ways to support this sector of agriculture.

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