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# BEEKEEPING DEVELOPMENT OPPORTUNITY FOR SERBIAN DANUBE

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**Summary:** *Beekeeping in the Serbian economy is one of the underdeveloped sector. Modern agriculture today can not be imagined without a developed and modern beekeeping as a part of agriculture and the national economy that is subject to economic laws that operate in the market and is inextricably linked to all the developments in the domestic and global economics. The importance of this activity is potentiated in this paper. The paper analyzed the production of honey, the total number of hives and honey production per hive in Central Serbia, Vojvodina and Serbian Danube region. The aim of this paper is to highlight the importance of beekeeping as an economic sector that has significant potential for sustainable development within the Serbian Danube region. The presented data related to beekeeping in statistical databases and literature data related to beekeeping.*

**Key words:** *beekeeping, honey production, sustainable development, Danube.*

## INTRODUCTION

Modern agriculture is not to be imagined without a developed and modern beekeeping because of agriculture and the national economy subject to economic laws that operate in the market and is inextricably linked to all the developments in the domestic and global economics. With five million acres of land - (arable land, garden, orchards, vineyards, meadows, pastures, and large areas of forest) Serbia has extensive natural resources for development of beekeeping and honey production quality.

In Serbia, beekeeping has a long tradition. Honey and other bee products are of high quality. In Serbia, there is a natural predisposition for the development of beekeeping in terms of climate (temperate continental climate), in terms of the rich flora and a variety of honey plants and excellent conditions for beekeeping. Beekeeping is one of the untapped agricultural potential of Serbia and the state level is increasing acknowledgment that there is potential for honey production and export potential of bee products. It is estimated by experts to be fond of hives which now has about 320 thousand could be the 1. 200.000 given the potential that Serbia has. Honey is a highly valuable food in terms of nutritional and in terms of medicinal ingredients. Composition and properties of honey depend on the properties of the nectar honey plants from which the bees collect it. (<http://www.makroekonomija.org/poljoprivreda/proizvodnja-i-izvoz-meda-iz-srbije-vise-kosnica-manje-meda/>)

Honeybee is an indispensable factor in crop production. Collecting nectar and pollen from flowers as food, they pollinate hundreds of different species of plants. The value created by the participation of honeybees in pollination is not assessable and unavoidable cropping measures that increase crop production and improves the quality of fruits and seeds (the impact of bees on the yield and quality of the fruit ranges up to 70 percent). Potential production of honey in Serbia looking natural conditions: climate, plant varieties, environmental status, etc. would be around 600-700 thousand hives with a production of about 20 kg of honey per hive or an average of about 14.000 tons. Export potential is around 12-14.000 tones, or almost the entire amount produced. The potential of foreign exchange inflow is around 30-40 million. That's still less than Hungary. ([www.pcela.rs/pcelarstvo](http://www.pcela.rs/pcelarstvo))

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## MATERIALS AND METHODS

In the results were statistically processed data for the period since 2000th the 2010th of the number of hives and honey production in the Republic of Serbia, (Central Serbia and Vojvodina). The research in addition to sources of statistical data on beekeeping production used the data of the Ministry of Agriculture, Trade, Forestry and Water Management, World Bank data, the Food and Agriculture Organization (FAO), as well as numerous consulted the literature.

The collected data are analyzed by standard mathematical and statistical methods, which can serve as a solid basis for predicting the performance of certain production scale and production that can be expected in the future.

## RESULTS AND DISCUSSIONS

The world annual production of 1.3 million tons of honey. (<http://www.americanhoneyproducers.org>)

Most honey is produced in Asia (385.000 t), while in the EU the annual honey production is 133.000 t. The largest honey producers are countries in Southern Europe, where beekeepers are professionally engaged in the production of honey, such as France, with 31.000 t, 30.000 t of Spain and Greece with 15.000 tons per year. In Northern Europe, honey production is lower because it is mainly engaged in the production of honey beekeepers - amateurs. Honey they produce is for their own use and for sale at the local level. (Table 1)

**Table 1. Honey production in some European countries in 2009th**

No.	The name of the state	Weight of honey in 1.000 t
1	Austria	5,5
2	Belgium and Luxembourg	2
3	Denmark	3
4	Finland	1
5	France	31
6	Germany	15
7	Greece	15
8	Ireland	0,1
9	Italy	11
10	The Netherlands	0,8
11	Portugal	11
12	Spain	30,4
13	Sweden	3,3
14	UK	4
15	Serbian 5	5,5
16	Total	135,6

Source: FAO

The most important export market is the European Union, with in 2010. were exported 3/4 of the total exports (Germany with 45 % share, followed by Italy and Austria) and in addition to exports and to CEFTA countries (Macedonia, Montenegro and Bosnia and Herzegovina). This paper will provide a theoretical and practical contribution to responsible for the production of honey, have guidelines for appropriate measures to improve honey production in Serbia.

In Table 2 are listed statistics on changes in scale production of honey and hives all over Serbia, and also in Central Serbia and Vojvodina in particular. Calculation of data in Serbia in 2000 was 167,000 hives and 2663 tons of honey and honey production per hive for the year 2000 was 16 kg. Participation Central Serbia in the total number of hives in Serbia in 2000 was 92.8% and Vojvodina 7.2% share in the production of honey in Central Serbia is 92.0% and 8.0% of Vojvodina.

**Table 2. The beekeeping in Serbia from 2000th to 2010 th**

	The Republic of Serbia			Central Serbia			Vojvodina		
	<i>BEEHIVE S, thousands of pieces</i>	Producti on of honey	<i>Kilogram s, per beehive</i>	<i>BEEHIVE S, thousands of pieces</i>	Producti on of honey	<i>Kilogram s Perbeehi ve</i>	<i>BEEHIVE S, thousands of pieces</i>	Producti on of honey	<i>Kilogram s, per beehive</i>
2000.	167	2663	15	155	2447	15	17	216	15
2001.	179	2317	14	162	2178	15	<b>17</b>	139	9
2002.	164	2550	13	149	2340	13	15	210	10
2003.	201	3242	12	180	2662	12	21	581	13
2004.	266	3579	13	222	3041	13	44	538	13
2005.	270	3665	13	228	3196	13	42	468	13
2006.	304	4048	13	258	3633	14	46	416	9
2007.	267	3538	13	236	3155	13	31	383	12
2008.	298	2561	9	232	1824	8	66	738	11
2009.	302	4577	15	256	4142	16	45	434	10
2010.	320	4479	14	271	3951	15	49	527	11

Source: Statistical yearbook, 2000-2010., Statistical office of the Republic of Serbia

For the year 2001 the total number of hives has increased compared to the previous year 2000 to 7.2% in the Republic of Serbia, but the total honey production dropped by 13% Central Serbia share in the total production of honey in Serbia is 94.0% and Vojvodina only 6.0%.

Honey production in 2002 was 10% higher but the number of hives declined in Serbia by 8.4%. Production of honey in Central Serbia increased by 7.4% in Vojvodina to 51.0%, the proportion of Central Serbia in the total production of honey in Serbia is 91.7% and 8.2% of Vojvodina.

In the Republic of Serbia since 2003, increasing the number of hives to 201 thousand, which is 22.5% more than in the previous year, and with that, honey production, which amounted to 3,242 tons, which is 27.1% more than the 16kg per hive. Of the total production of honey in Serbia largest honey production in 2003 was in Central Serbia, 82.1% and 17.9% in Vojvodina. In the following year 2004 in Serbia there are increasing number of hives by 32.3% and the production of honey by 10.4% and per hive 13,5kg, compared to 2003. In 2005, following an increase in the number of hives accounted for only 1.5% and the production of honey by 2.4% compared to the previous year. Compared to 2005, 2006 to increase the number of hives is the largest 304 thousand, its 12.6% and the production of honey, which has reached a maximum production of 4,048 tons in the Republic of Serbia, or 10.4% more, which is 13.3 kg per hive. The share of Central Serbia in total honey production in 2006 was 89.7% and 10.3% of Vojvodina.

In 2007 there is a decline in the number of hives by 12.2% and the production of honey by 12.6% compared to the previous year due to severe drought because the bees did not have a good flow and in the winter they entered weakened, a spring pasture due to poor climatic conditions were not sufficiently abundant to allow the recovery of the hives. Therefore, it is killed more than 110.000 bee society.

Data for 2008 show that the total number of hives in the Republic of Serbia in relation to the previous year increased by 11.6%, but honey production declined by 27.6% (due to the above reasons), which is the production per hive with 13 dropped to 9 kg. According to the calculation of the total production of honey Central Serbia accounted for 71.2%, which is 42.2% less honey production compared to 2007, while the share of Vojvodina is 28.8%, which means that the honey production in Vojvodina twice as high compared to the previous year, with 383 tons in 2007, increased to 738 tons in 2008, which is 92.7% more.

Increasing the number of hives in 2009 by the Republic of Serbia is only 1.3% compared to the previous year, but honey production is 78.7% higher. The largest increase was in Central Serbia, 4,142 tons of honey, which is 2,318 tons, or 127.0% compared to the previous year, and the share in the total production of honey in Serbia for Central Serbia is 90.5% and only 9 t of Vojvodina, 5%.

According to statistical data related to the year 2010, the number of hives in the Republic of Serbia, although it increased by 6% but honey production dropped by 2.2%. The largest increase in honey was in Vojvodina and to 21.4%, while 4.6% lower production in Central Serbia, compared to the previous year. The share of Central Serbia in the total production of honey in Serbia is 88.2% and 11.8% of Vojvodina.

## CONCLUSIONS

Based on the presented results it can be concluded that beekeeping in Serbia is relatively well developed, but there is potential (especially in the Danube riparian areas) that this activity continues to develop and become more powerful export sector in Serbia. In recent years, honey yields have increased substantially. The application of modern technology and intensive training of beekeepers may be in a stationary beekeeping yields doubled, and in migration and quadruple. Honey is the most attractive product, many countries export it's achieve enviable foreign currency income. In addition beekeeping to export to foreign markets made a positive export balance, because honey from our area's quality and most sought after in the world. Although the last few years, the Ministry of Agriculture has taken measures to improve conditions in beekeeping through subsidies and allowances, and to the production of queen bees and swarms purchase beekeeping equipment, it is necessary to pay more attention to beekeeping.

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