

## **Analysis of honey production in Serbia aimed at improving the international competitiveness**

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### **Abstract**

The subject of this research is an analysis of honey production in Serbia in order to appreciate the level of competitiveness of production and point out the problem faced by domestic producers and to propose measures to improve the existing situation. In this research, we specifically analyzed the ratios of production of honey producer groups from Vojvodina who are users of geographical indications "Linden honey from Fruska Gora." In this paper, we dynamically comprehend the level of foreign and domestic production and trade and measure the level of comparative advantage in exports of honey from Serbia. In order to measure the level of comparative advantage in exports of honey from Serbia, we used five RCA index RXA, RTA, ln RXA, RC and RCA. Results of research point out an intensification of production and trade of honey in the world and in Serbia and a high positive value relative export advantage (RXA), outdoor (RC) and expressed comparative export advantage (RCA) of honey. Given the growing potential of the EU market and constantly increasing demand for honey, Serbia must make a significant effort and improve the level of competitiveness of production of honey.

**Keywords:** Honey production. Demand and supply of honey. The comparative advantage.

## 1. Introduction

Serbia produces approximately 4,200 tons of honey; the average number of beehives is 305, while the average yield is 12 kg per beehive. Manufacture and supply of honey in Serbia is largely unorganized and has all the characteristics of "one and all". In recent years, the production of honey is engaged in a greater number of people, but we can only talk conditionally about an organized and continuous production.

Thus organized production is heavily influenced by natural factors, as reflected in the quality of supply in terms of quantity, quality and continuity. For these reasons we have fluctuations in production in Serbia and Vojvodina. Grubić (2008) points out that "beekeeping in Vojvodina has the potential for success, because this plain is diverse with flora - bee plants that grow in this fertile plain. According to experts, beekeeping production in Vojvodina (using the latest scientific achievements and accessories) in the next ten years could be increased five to ten times." By showing the production of honey per year it is difficult to perceive the seasonal fluctuations in the tender, which are clearly present depending on the type of honey and weather conditions.

The problem faced by manufacturers in Serbia and the neighboring countries is unregistered manufacturing. According to Bračić (2004) only 50% of production in Croatia is registered. Dugalić-Vrندیć et al (2011) have dealt with the problem of counterfeits honey in Serbia. They point out that it is important for the market to make the real difference between counterfeit and genuine natural honey. Nikitović et al (2000) dealt with composition of honey, the content of micro and macroelements of honey and they concluded that due to its rich composition, honey plays an important role in nutrition, medical treatments and cosmetics. As the domestic consumption of honey is small and according to Bekić, Jeločnik and Subić (2013: 182) "is 0.7 kg as opposed to the population in Western European countries, where it ranges from 4 to 8 kg per capita,, there are significant quantities of honey for export. Honey is used in the domestic market in basic form with minimum processing.

Honey processing "would give a product of higher added value" and how Bekić et al (2013) point out, increasing the range or innovation in the production and supply or "choice of a good marketing strategy would increase the profitability of beekeeping." Kečar et al. (2012) analyzed the potential export of honey and placed them in group "non-timber forest products." They point out that Vojvodina has the potential to export their local honey to the EU market, especially to Germany. Research of production and trade of honey is important for our

research not only in terms of the analysis of the functioning of markets, but also because of the possibility of a detailed assessment of competitiveness factors of honey production and provision of necessary information to all participants in the production process and to propose measures to improve the current situation.

## 2. Methodology

The subject of the research is to analyze the production of honey in the world and in Serbia. The aim of this research was to study the comparative and competitive advantages for production and export of honey in Serbia. For this purpose, we examined the structure of production of honey, dynamically perceived foreign trade; we analyzed competitiveness and measured the level of comparative advantage in exports of honey from Serbia. In particular, we explored the production of the group of honey producers in Vojvodina; they use names in protection of geographical origin Linden honey from Fruska Gora. We overviewed indicators of their production. The paper used data from EUROSTAT, FAOSTAT and UNCOMTRADE for the corresponding year.

We overviewed indicators of their production.

The concept of comparative advantage is set by Balassa (1965) and the original model is:

$$RTA = RXA - RMA$$

$$B = \left( \frac{X_{ij}}{X_{it}} \right) / \left( \frac{X_{nj}}{X_{nt}} \right), \text{ where } X \text{ is export, } i \text{ is the country of export, } j \text{ the product for export, } t \text{ is}$$

the set of product for export, and  $n$  is the group of countries that export the goods. In case that  $B > 0$ , we have found the comparative advantage. Alternative comparative advantages was offered by Vollrath (1991) as the relative trade advantage (RTA). RTA is calculated as the difference between relative export advantage (RXA) and the relative merits of imports (RMA).

$$RXA = B$$

$$RMA = \left( \frac{M_{ij}}{M_{it}} \right) / \left( \frac{M_{nj}}{M_{nt}} \right),$$

where  $M$  is import,  $i$  is the country of import,  $j$  is the product that's

been imported,  $t$  is the set of products that's been imported, and  $n$  is the set of countries that imports. Vollrath has created a second index as the logarithm of the relative advantages of exports and imports of the logarithm of the relative advantages ( $\ln RXA$  and  $\ln RMA$ ). According Vollrath competitiveness the detected ( $RC$ ) is expressed as:  $RC = \ln RXA - \ln RMA$ . According to Buturac (2008, 2009) comparative advantages of export of honey in period 2006-2013 were analyzed by the application of the RCA index. Form for calculating pronounced comparative advantages is:

$$RCA = \ln \left[ \frac{X_i}{M_i} \right] \times \left( \frac{\sum_{i=1}^n X_i}{\sum_{i=1}^n M_i} \right) \times 100$$

In this form  $X$  represents the value of export;  $M$  represents the value of import.

### 3. The Empirical Results and Conclusions

#### 3.1. Production and turnover of honey in the world

In a study of honey we went from world production of honey per year. Eurostat data show the uniform production, which annually amounts to 1,460 thousand tons and the average growth rate is 2.3% per annum. Available data indicate a slight increase in the gross amount of production that is not accompanied by an increase in value. The lack of significant positive results is a consequence of the numerous problems faced by manufacturers all over the world, especially in Serbia (Table 1).

It is clear that some regions or countries have favorable natural conditions for the production of honey. Table 1 shows the structure of honey production by country for the period of 2001- 2012. Analyzing the data of honey production by EUROSTAT, we conclude that the world's leading manufacturers in the analyzed period are China, Turkey, USA, Argentina and Ukraine. China dominates in production and average is 352.58 thousand tons and a share of 27.24% of world production. The second place in production of honey is Turkey with an average of 197.25 thousand tons and a share of 6.08%. The third place with its production of honey is Argentina with an average production of 78.5 thousand tons and a share of 6.06%.

**Table 1: World production of honey in the period 2001-2012 (1000 tons)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
China	254	268	295	298	300	338	357	407	407	409	446	452
EU 27	180	176	198	204	198	204	195	198	202	204	217	191
Turkey	60	75	70	74	82	84	74	81	82	81	94	88
Ukraine	60	51	54	58	71	76	68	75	74	71	70	70
USA	84	78	82	83	73	70	67	74	66	80	67	67
Russia	53	49	48	53	52	56	54	57	54	52	60	65
India	52	52	52	52	52	52	51	55	55	60	60	61
Argentina	80	83	75	80	110	105	81	72	62	59	59	76
Mexico	59	59	57	57	51	56	55	55	56	56	58	59
Ethiopia	34	40	38	41	36	51	42	42	40	42	54	46
Iran	27	28	15	29	35	36	47	41	46	47	47	48
Brazil	22	24	30	32	34	36	35	38	39	38	42	34
Canada	35	37	35	34	36	48	31	29	32	34	36	29
Tanzania	27	32	27	26	35	32	33	36	33	34	34	-
Korea	22	20	18	16	24	23	26	26	28	24	24	-
Angola	24	25	23	22	24	23	26	27	26	23	23	23
Uruguay	10	10	10	13	10	13	16	10	8	19	19	20
Australia	19	18	16	15	15	18	18	17	17	16	16	11
Central African Republic	14	15	16	16	14	14	14	15	16	15	15	16
New Zealand	9	5	12	9	10	10	10	12	13	13	13	10
Other	143	145	152	152	159	171	178	176	178	181	183	227

The source: EUROSTAT, EU Market Situation for Honey, April 2013

### 3.2. Competitiveness of production and turnover of honey in Serbia with emphasis on Vojvodina

Areas most favorable for the production of honey are Sumadia and Zlatibor, and in Vojvodina, Fruska Gora. Data of honey production in Serbia were collected from SORS (Statistical Office of the Republic of Serbia), PBS (Provincial Bureau of Statistics) and Association of Beekeeping Organizations of Serbia (ABOS) . Problems we encountered are the continuity of data. In the following research we looked at honey production in Serbia in the period 1965 - 2013. As we wanted in this study to specifically point out problems in

honey production in Vojvodina, we looked at the data on the total share of manufacturing of Vojvodina in total of republic production (Table 2).

**Table 2: Honey production in Serbia and Vojvodina in the period 1965- 2013**

REPUBLIC OF SERBIA (t)				Vojvodina (t)			
1965	117	2006	4,048.00	1965	366	2006	416
1975	1,434.00	2007	3,538.00	1975	819	2007	383
1985	2,608.00	2008	2,561.00	1985	440	2008	738
1995	154	2009	4,577.00	1995	288	2009	434
2000	2,663.00	2010	4,479.00	2000	216	2010	527
2001	2,317.00	2011	4,283.00	2001	139	2011	726
2002	255	2012	6,865.00	2002	210	2012	*
2003	3,243.00	2013	8,554.00	2003	581	2013	*
2004	3,579.00	The growth rate (%)	<b>11,69</b>	2004	538	The growth rate (%)	<b>4,38</b>
2005	3,665.00			2005	468		

Source: SORS taken over on 10.09.2014. (\*SORS has no available data for 2012 and 2013 for Vojvodina)

The honey production grew for a long time and the rate of grow was 11.69% annually. The production in Vojvodina grew by 4.38% annually. We noticed the significant increase of production in 2013 on republic level, which is, compared to 1965, increased for 7.3 times. In Vojvodina, the increase in production was a slow-paced. The territory of Vojvodina is home to about 27% of the population, which indicates the significant potential of this market segment. Honey production in Vojvodina represents only 11.24% of the total production. How SORS does not have precise data on the consumption of honey in Vojvodina, information about a small offering, points to the need for designing higher demand through the market to boost production. By doing so we would meet local needs and provide significant quantities for export.

For the purpose of detailed analysis of honey production in Serbia we have analyzed the following indicators: the number of hives (instead of the number of beekeepers, expressed in thousands) honey production (expressed in t) and yield (the quantity of honey per hive expressed in kg). In the period 2001-2013 the number of beehives in Serbia was growing at a rate of 6.95% per annum, while in Vojvodina the rate was 18% per annum. The average number of hives in the analyzed period is 305.46, of which approximately 16.43% is located

in Vojvodina. In particular, we would point out 2012, when we achieved a significant increase in the number of hives at national and provincial level (Table 3).

**Table 3: Beehives, production and yield in Serbia and Vojvodina in the period 2001-2013**

	Beehives (in thousands)			Production of honey (t)			Yield (kg)		
	Serbia	Vojvodina	Share Vojvodina (%)	Serbia	Vojvodina	Share Vojvodina (%)	Serbia	Vojvodina	Average share
2001	179	17	9.50	2,317	139	6.00	12	10	11
2002	164	15	9.15	2,550	210	8.24	13	12	12.5
2003	201	21	10.45	3,243	581	17.92	12	13	12.5
2004	266	44	16.54	3,579	538	15.03	13	13	13
2005	270	43	15.93	3,665	468	12.77	13	13	13
2006	304	46	15.13	4,048	416	10.28	13	9	11
2007	267	31	11.61	3,538	383	10.83	13	12	12.5
2008	298	66	22.15	2,561	738	28.82	9	11	10
2009	302	45	14.90	4,577	434	9.48	15	10	12.5
2010	320	49	15.31	4,479	527	11.77	14	12	13
2011	306	59	19.28	4,283	726	16.95	14	11	12.5
2012	665	124	18.65	6,865	*	*	11	*	*
2013	429	150	34.95	8,554	*	*	*	*	*
Prosek	305.46	54.62	16.43	4,173.77	469.1	11.24	12.67	11.45	12.14

Source: SORS (\*SORS has no available data for 2012 and 2013 for Vojvodina)

The average honey production in Serbia is amounted to 4,173 t of which 11.24% was produced in Vojvodina. The yield of honey production has amounted to an average of 12.67 kg per hive, while in Vojvodina that is 11.45 kg. In the following research we looked at the level of purchase prices in Serbia in the period of 2001-2013 years. The level of purchase prices increased in 2013 (280 RSD) compared with 2001 (83,16 RSD), 3.37 times, which represents an average annual increase of 9.8%.

Data on exports and imports of honey from Serbia show that in the ten-year period there was an increase in exports at the rate of 47.64%, while imports was at the rate of 54%. The average value of exports of honey from Serbia amounted to \$ 4,798 thousand, and imports \$ 62.4 thousand. Analysis of the exported quantities of honey indicates a significant increase in the rate of 61.74% per annum. Price of exports has increased significantly in the

last year by average of \$ 4.42, which is higher compared to the average for the ten-year period (3.56 \$) (Table 4).

**Table 4: Export and import of honey from Serbia in the period 2004-2013.**

Year	Export/import	Export	Import	The average price of exports (\$/t)	The coverage of imports by exports	Year	Export	Import	The average price of exports (\$/t)	The coverage of imports by exports
2004	Amount, in tons	121,5	0			2009	912,5	9,2		
	Value in thousands of USD	302,5	3,2	2,49	94,53		3,220.30	59	3,53	54,58
2005	Amount, in tons	59	0			2010	1,915.70	43,3		
	Value in thousands of USD	143,2	0	2,43	/		7,536.90	158	3,93	47,7
2006	Amount, in tons	159,2	7,9			2011	1,108.10	14,8		
	Value in thousands of USD	536,8	24,1	3,37	22,27		5,119.80	73,6	4,62	69,56
2007	Amount, in tons	389,6	16,2			2012	2,966.10	1,6		
	Value in thousands of USD	1,221.30	43,9	3,13	27,82		12,908.10	14	4,35	922,01
2008	Amount, in tons	638,4	0,8			2013	3,367.80	60,7		
	Value in thousands of USD	2,115.90	7,6	3,31	278,41		14,881.50	240,4	4,42	61,9

Source: SORS and authors' calculations

The coverage of imports by exports is high. The highest coverage rate was recorded in 2012 and 2008. Later on, we used RXA, RMA, RTA, RC and RCA for measuring comparative advantage of export from Serbia. Analysis of the competitiveness index indicates a high value of relative export advantage (RXA) whose average value in the analyzed period is 5.27.

The high value of the relative advantages of exports accompanied by high value of variance indicates a large deviation of the measured values of the average value for the



sample. The value of relative market advantage (RTA) is also positive and very close to relative advantage of export, which indicates a significant export position, but this value is not stable, it has some value and volume fluctuations. Value revealed competitiveness (RC) and severe comparative advantage (RCA) is a small positive value of the variance, which indicates the presence of stable positive benefits of exports relative to imports (Table 5).

**Table 5: RXA, RMA, RTA, RC and RCA indicators of export of honey**

	Indexes				
	RXA = B	RTA	Ln RXA	RC	RCA
2006	1.20	1.17	0.18	3.79	3.12
2007	2.13	2.09	0.75	4.07	3.19
2008	2.37	2.36	0.86	5.28	4.70
2009	3.81	3.77	1.34	4.67	3.89
2010	7.73	7.63	2.04	4.40	3.80
2011	4.56	4.52	1.52	4.76	4.20
2012	11.21	11.20	2.42	7.29	6.96
2013	9.12	9.07	2.21	5.20	3.62
<i>Average</i>	5.26625	5.22625	1.415	4.9325	4.185
<i>Variance</i>	13.3754	13.33746	0.617829	1.168793	1.520686

Source: ITC and authors' calculations

The positive value of RCA index, according to the theory, indicates the presence of comparative advantage in exports. To the existence of comparative advantage we pointed out in an earlier study (Ignjatijević et al., 2014, p. 264). In the analyzed period, the positive comparative advantage is a result of the existence of the positive value of net exports (exports-imports). In fact, the value of exports is greater than the value of imports, and that has the positive impact on RCA. Conducted analysis of exports and imports indicates a negligible value of import of honey. The demand for honey in the domestic market is satisfied by domestic production, so that the demand for imported honey is negligible. On the other hand, the increase in export indicates the existence of an increase in demand on the international market. As the domestic production of honey is faced with numerous problems that adversely affect the level of price competitiveness on the international market, so we can conclude that of all the factors, the demand for a high quality of honey is crucial for foreign buyers.

### 3.3. Terms of demand in honey production

The willingness of consumers to buy and consume honey depends on a number of factors. Changes in demand for honey are the result of the operation of the so-called initiator of change. Consumption of honey is almost as old as the man, just as man is now better informed about the positive effects of honey. Today, the consumption of honey is with one hand motivated by customer satisfaction achieved by eating honey, and on the other hand is connected with the concern for health or healthy lifestyle. The experience of friends and family are the main drivers of the adoption of a new concept in the consumption of honey, a significant role is also a medicine and media. Honey is used as additional remedy and also in the diet. As the primary factors that affect the demand for honey, we found: demographic factors, socio-cultural, psychological and economic factors.

The average age of population in Vojvodina is 41.8 years (2011 census). Total population makes 14.36% of young people under 14 years, 69% aged 15-64 years and 16.4% older than 65 years. Consumption of honey is related to the younger and older age. The consumption of honey is dominated by women, and if we look at the educational structure, we will notice that is dominated by medium and highly educated consumers. As a significant factor in the demand we will mention habits and the expected effects. A habit to use honey is adopted at the earliest age, when it is easiest to develop that habit. With age, awareness about the healing properties of honey increases. The principal motive for consumption honey has beneficial effects on the human organism.

The demand for honey is seasonal. Certain numbers of consumers consume honey during entire year, but there is also certain number of consumer who consumes honey only in winter, during the flue epidemic or respiratory infections. We have to point out, that individual demand is also present in consumption of honey, and it is affected with price and disposable income. Honey is price-elastic product, which means, that with increasing the price of it, that will decline the demand for it. In the last year of the research (2014) the average price of honey on the market (not in stores, but in direct sales) is 600- 700 RSD / kg depending on the type of honey. Demand for honey has income elasticity so that the increase in disposable income will lead to growing demand for honey.

The degree of social migration positively affects the consumption of honey, so the increase in living standards will lead to growing demand for honey. However, the concern is the fact that the average consumer basket was 65,948.8 RSD (June 2014), and the average

salary is 45,216 RSD and the average household income is 55,280. As in recent years in Serbia we have the declination in living standards it is important to make a significant effort in the sphere of production (to increase productivity and technological innovation) and marketing to maintain spending at current levels and increase it in the future. If we talk about rural migration and its impact on the consumption of honey, in our opinion that it has no special influence.

### **3.4. General conditions for development of the competitiveness of honey**

Beekeeping is now in Serbia and Vojvodina popular and people deal with it professionally and some of them as a hobby. In addition to the vocational education and training (professional beekeepers) manufacturers are professionally trained through professional conferences, lectures and other forms of education. In recent years, production has included more young beekeepers, or intrinsic activity of the Beekeepers Association is to promote beekeeping, youth work and the involvement and training of new members. The state has no information on vocational education of beekeepers, which shows that in the future period we have to systematically regulate this area. So to make a conclusion, each of beekeepers is engaged in productive activity and other administrative matters, regardless of qualification and age structure. Interestingly, the producers, in an effort to increase the level of competitiveness of the product, pay less attention at improving the qualification structure - hiring expert consultants, collaboration with veterinarians, management and control of production. Poor use of PCs and the Internet is one of the limiting factors of competitiveness. While in Serbia, 60% of households own a computer, and 55.8 Internet connection (in Vojvodina, the situation is more favorable 64% of households own a PC and internet connection) a small number of beekeepers use the PC for business.

One of the main reasons for slow development of beekeeping is a modest investment in human capital, ie commercial beekeepers policy is primarily focused on investing in natural resources production. Analysis of the movement of capital and investments in the field of beekeeping are focused primarily on the Eradication: Analysis of financial incentives beekeepers, loans and interest, as well as ensuring production.

The general problem when it comes to beekeeping is the transport of bees from one location to another. An old local road network limits the normal movement of beekeepers, so that a larger number of beekeepers are determined for stationary production.

### **3.5. Manufacturers strategy, structure and rivalry in production of honey**

Production of honey is in the private sector. A significant limiting factor in the competitiveness of honey production is lack of managerial and marketing skills. Producers of honey are primarily sales oriented and focused on earning profits in the short period of time. That is completely contrary to the marketing orientation that puts the spotlight on consumer orientation, focus on long-term positioning in the market and making profit in the long run. Honey producers are not ready to invest in promotion of production capacities, as well as in brand building, since it involves the allocation of significant financial resources, and the refund and the expected profit growth can not be achieved in a short period of time. Beside that, producers of honey identify marketing primarily with the promotion, and they invest in promotion poorly, while investment in research, development and innovation, design and brand building, are practically neglected. Also, sales channels are not sufficiently developed, considering that the direct sale of honey directly from the manufacturer dominates. Some representatives of beekeepers association are initiators of adopting marketing knowledges through organizing educations and participating in domestic and international projects that provide expert support in area of marketing. Without individual investment in education that provides knowledge in marketing and management, as well as clustering of beekeeping, it is difficult to expect the improvement in marketing and management sphere of beekeeping.

After 2000 year, and significant liberalization of market, the terms for growing the competitiveness of honey production were finally made. Market opening is expected to contribute to increasing the content of innovation and technology in the product - honey. However, most manufacturers is pressed by financial difficulties related to current operations, lack of working capital, so that investments in research and development has been reduced to a minimum. The current situation is unfavorable and we do not expect significant improvement of the process of honey production.

### **3.6. Associating of honey producers and the role of the state**

Association of Beekeeping Organizations of Serbia (ABOS) has nearly 8,000 members and Association of Beekeeping Organizations of Vojvodina (ABOV) 2,500 beekeepers organized into 60 companies. Traditionally there are advising beekeepers of

Vojvodina at the Faculty of Agriculture in Novi Sad every March. In Vojvodina in 2014 a cluster "Pannonian bees" is formed. The Association shall provide stimulating the development of production, affecting the exchange of ideas and experiences, cooperation with state institutions, a word should ensure the improvement of competitiveness. Within the existing cluster, competitive advantage (labor and natural resources) should be better used. Research and development should include the Institute and other scientific - educational institutions that are more accessible. The role of government in improving the competitiveness of production or supply of honey is reflected primarily in the creation of favorable conditions for business operations. The state should support the production of organic honey in order to be competitive in quality in a demanding market of the EU. In Serbia, we have serious problems of unemployment, especially youth (over 50%) so the state should support the development of beekeeping.

#### **4. Competitiveness of production and traffic of honey in group of 30 Vojvodina producers of honey who are users of names on the protection of geographical origin Fruskogorski linden honey**

With this study we have gathered 30 producers of honey from Vojvodina that are users of names on the protection of geographical origin Fruskogorski linden honey. In the study we have analyzed the volume of production of honey, especially linden honey production, transport or sale of honey with an emphasis on sales volume linden honey, the level of sales prices linden honey, production costs, and more. In a study of production volume, we met with numerous problems. The main problem is the lack of continuity of data over a long time, and modest data on honey production in the past. For this reason, we decided to analyze the data in a shorter period, and included the production and trade of honey in the period 2008- 2013 (Table 6).

**Table 6: Production of honey in Vojvodina that are users of names on the protection of geographical origin Fruskogorski linden honey, in the period 2008- 2013**

Year	Total amount of honey (kg)	The amount of linden honey (kg)	Share of produced quantities of linden honey in the total amount of honey (%)
2008	2,700.00	900.00	33.30
2009	4,200.00	1,500.00	35.70
2010	6,600.00	2,580.00	39.00
2011	7,400.00	2,650.00	35.81
2012	19,350.00	5,930.00	30.65
2013	26,710.00	8,590.00	32.16
Average	11,160.00	3,691.67	34.44

Source: Manufacturers Association and the authors' calculations (manufacturers do not have the earlier data)

The analysis of the data shown in the table, we conclude that it was only in the period after 2012 achieved a significant increase in production. When it comes to the production of linden honey conclusion is as follows: the total production share of linden honey production ranges from 30.65 - 39% and on average is 34.4%. The increase of honey production is at a rate of 46.52% per annum and linden honey at a rate of 45.6%.

Turnover of honey by honey producer groups in Vojvodina that are users of names on the protection of geographical origin Fruskogorski linden honey, on domestic market we showed below. In 2008-2013 the turnover of honey ranged as follows (Table 7).

**Table 7: Turnover, prices and costs of production of honey by honey producer groups in Vojvodina that are users of names on the protection of geographical origin Fruskogorski linden honey, in the period 2008- 2013**

Year	Honey (kg)	Linden honey (kg)	Price of honey (RSD/kg)	The cost of production of honey (RSD/kg)
2008	2,500	/	380	140
2009	4,000	400	400	266
2010	9,400	1,100	375	223.2
2011	5,600	1,800	320	240
2012	16,980	4,450	420	248
2013	19,440	7,300	600	300

Source: Association of producers and authors' calculations

Offer of a homogeneous product primarily depends on the level of costs and prices. Below we showed the differences in net income (Table 8).

**Table 8: Neto income of production of honey by honey producer groups in Vojvodina that are users of names on the protection of geographical origin Fruskogorski linden honey**

		2013	2012	2011	2010	2009
A	Honey production in Serbia (t)	8,554	6,865	4,283	4,479	4,577
B	Honey production in Vojvodina (t)	-		726	527	434
C	Sale of 30 producers (kg)	19,440	16,980	5,600	9,400	4,000
D	The average selling price (RSD)	600	420	320	375	400
E	The average cost (RSD)	300	248	240	223,20	266
F	Margin D-E (RSD)	300	172	80	151,80	134
G	Gross income D*C (RSD)	11,664,000	7,131,600	1,792,000	3,525,000	1,600,000
H	Total gross margin D*F (RSD)	5,832,000	2,920,560	448,000	1,426,920	536,000
I	Allocations for marketing and other costs (RSD)	514,800	487,858.80	0	451,222.20	429,000

Source: Poll producers and authors' calculations (RSD - dinars)

The research results indicate that 2013 represents an increase of production and prices. The average costs up to 50% of the sale price results indicate that the production of honey producer groups ensures profit. The data we obtained in the survey indicates very little average expenditure for marketing and some additional costs. Allocations average is 143 euros per producer or 4.4% of total gross revenue in 2013.

Analysis of competitiveness of production and trade of honey by honey producer groups in Vojvodina that are users of names on the protection of geographical origin Fruskogorski linden honey points out to:

- Consumers are predominantly buying directly from the well-known manufacturer and consumption dominates with buying packs of 1 kg of honey and once in three months. The establishment of links between producers and consumers indicate a high degree of loyalty and therefore is more important than other factors.
- Analyzing the group of 30 honey producers from Vojvodina we conclude that in most cases the complete activity from production to sales and promotion is aimed at the immediate family.

- Analysis of producer's investments shows that no one used state subsidies, and investments were made in field of purchasing new machines and beekeeping equipoiement. We also found that a very small number of producers have secured property and production.
- Given the level of production and the current state of beekeepers equipment, the need for significant resources is probable. Conditions for obtaining loans have not significantly changed and beekeepers are of the opinion that due to the high capital costs and complicated conditions for granting equity loans still inaccessible.
- A study conducted by the Faculty of Science and reference laboratories confirms top quality linden honey from Fruska up.
- A group of 30 producers of Vojvodina that are users of names on the protection of origin Fruškogorski linden honey are competitive as other producers of honey from beekeepers in Vojvodina and central Serbia. Import competition is negligible.
- Suppliers of equipment for beekeepers from Vojvodina (group of 30 beekeepers) from Serbia.
- The importance of associations ABOS and ABOV is big. ABOV the organizer of traditional counseling beekeepers and other events.
- The intensity of rivalry among beekeepers can be measured on the basis of costs and the degree of differentiation manufacturer. The costs mean the cost of raw materials, wages, certification, transportation and distribution, marketing - the operational costs of the whole production. Beekeepers with higher production have a higher level of competitiveness in relation to other beekeepers. This raises the logical question of whether it is between competitive prices compared to other honey producers. The selling price of honey in personal selling is average at the same level in Serbia, while the price in supermarkets and large retail chains increased to 30%. So, among which are sold through personal sales not differentiated brand, packaging design, price or promotion. But loyalty for honey beekeepers is an important factor that makes it competitive.

Using the SWOT analysis are perceived strengths and weaknesses of honey production, producers in Vojvodina, which pointed to the opportunities and threats in the environment (Table 9).



**Table 9: SWOT analysis of supply and demand with reference to honey 30 honey producers in Vojvodina user of names on the protection of geographical origin Fruskogorski linden honey**

<p>Benefits:</p> <ul style="list-style-type: none"> <li>Increasing production (quantity)</li> <li>Increasing the number of beehives in Vojvodina</li> <li>Production flexibility</li> <li>Competent personnel in the manufacturing and high long-term experience</li> <li>The territory of Vojvodina (especially Fruska Gora) has favorable conditions for honey production</li> <li>Top quality of Fruskogorski linden honey</li> <li>Defined purchase prices</li> <li>Increasing the level of sales price</li> <li>Sales of honey through personal sales</li> <li>Rural migration does not affect the consumption of honey</li> <li>Consumption of honey is identified with a concern for health</li> </ul>	<p>Weaknesses:</p> <ul style="list-style-type: none"> <li>A small share of production groups 30 beekeepers in Vojvodina and the total production of the Republic of Serbia</li> <li>Fluctuations in the production and supply of honey</li> <li>Fluctuations in yields</li> <li>Small average yield of honey per hive</li> <li>Low level of productivity and technological innovation in the production</li> <li>Minimum investment in research and development of the lack of cost advantages in production</li> <li>Offer is limited in quantity and continuity</li> <li>Seasonal supply and demand</li> <li>The lack of a strategic plan</li> <li>The lack of built brand</li> <li>Price and income elasticity of demand</li> <li>Poor distribution network</li> <li>Minimum marketing activities and the lack of managerial skills</li> <li>Minimum and absolutely insufficient investment in promotion</li> </ul>
<p>Possibilities:</p> <ul style="list-style-type: none"> <li>An increase in foreign demand</li> <li>New markets and new market segments</li> <li>The creation of vertical integration</li> <li>Associating in confessing and SPOS clustering</li> <li>Inclusion of beekeepers younger generation of highly educated and knowledge in marketing and management in honey production</li> <li>Increasing technological innovation in the production of honey</li> <li>Increase the number of users of protected geographical origin Fruskogorski linden honey</li> <li>Branding Fruskogorski linden honey and its differentiation in the minds of consumers compared to other brands of honey on the</li> </ul>	<p>Threats:</p> <ul style="list-style-type: none"> <li>The lack of data on production and the number of beekeepers and bee hives in Vojvodina for a longer period</li> <li>Lack of data on vocational education beekeepers</li> <li>Lack of financial support to production</li> <li>The producers did not use state subsidies</li> <li>Producers are not organized cluster</li> <li>Lack of vertical integration beekeepers</li> <li>Insufficient cooperation beekeepers with advertising agencies and professional NI organizations</li> <li>Unfavorable credit policy</li> <li>Production of beekeepers is not insured</li> <li>Occurrence of forgery and insufficient sanctioning counterfeiters honey</li> <li>Low purchasing power of the population in Vojvodina</li> <li>Inability product branding and promotion without intensification of soft loans and obtaining funding from national and international projects</li> </ul>

market of Serbia, primarily Vojvodina. Increasing the price of branded products Expansion of distribution channels - Intensive use of the Internet for promotional purposes	The possibility of entering the market of Vojvodina for strong foreign competing brands, which will have the financial ability to build a strong and recognizable brand and take a dominant position in the market.
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Source: Author based on survey of honey producers in Vojvodina

## 5. Conclusion

The survey results indicate a slight increase in world production, which is not accompanied by an increase in prices. The increase of honey production in Serbia and Vojvodina is more important than in the world. Proportion of honey production in Vojvodina is an average 11.24%, and when it comes to the number of hives share is 16.43%. The level of purchase price over the analyzed period has increased at a rate of approximately 10% per year. In the analyzed period, the export of honey grew at a rate of 47% per annum with high coverage of imports by exports. The survey results indicate a high positive value of the relative merits of exports, discovered and expressed comparative advantages. Analysis of honey production groups in Vojvodina users of names on the protection of geographical origin Fruskogorski linden honey, indicates an increase in production volume followed by profit up 50%. Manufacturers are users of protected designation of geographic origin, which is the basis for increasing the share of sales in the market. Manufacturers have performed a minimal investment in modernization, technical equipment and marketing activities, which reflects negatively on the level of their competitiveness. Our research determined that the producers included in this study did not use financial incentives from the state. When we talk about distribution channels, research indicates that the personal selling dominates at a lower price which is in direct relation to the established level of customer loyalty. Study of competitiveness of the production of honey and conducted SWOT analysis indicates that in the coming period mentioned benefits should be further developed. In this sense, it is necessary to increase production, or actively involve new young educated beekeepers. It is necessary to educate the population, in order to increase the consumption of honey and constantly expanding and upgrading health. Clear planning approach in order to overcome the production fluctuations in the offer of honey. By producing several kinds of honey and offer additional products from honey we can overcome the seasonal nature of the offer. Educating the population through the media, doctors and debates about healthy living is necessary to

popularize the use of individual honey throughout the year and in all ages. Manufacturers should choose some funds for training, marketing activities and technical equipment.

Given the high quality of linden honey from Fruska Gora and the share of the population living in Vojvodina is necessary to maximize production. The state should provide favorable conditions for business and supportive measures to help beekeeping production. How the production of honey is profitable, it requires a low initial investment and provides an opportunity for self-bee production can have a positive impact on the employment of young people and people who are jobless. The Beekeepers Association and the cluster should play a significant role in overcoming the problem of lack of awareness of beekeepers. Banks, insurance companies, as well as scientific and research organizations should establish vertikano relationship with producers through beekeeping association or organization in the cluster. Time to service the banking sector, insurance companies and marketing agencies made available to small producers such as beekeeping producers.

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