

ECONOMIC EVALUATION OF BEEKEEPING IN KARLOVACKA COUNTY

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ABSTRACT

Beekeeping in Croatia has a long tradition. There are favourable climate and vegetation conditions for development of beekeeping in Croatia. The number of registered beekeepers in Croatia is 3.404 with total of 313.978 beehives. Most of them are part-time beekeepers (53 %), hobby beekeepers comprise 37 % and professional beekeepers represent the smallest part with 11 % [3]. Beekeeping production is mainly organized on family farms [5]. Karlovačka county, in the central part of Croatia, was chosen to analyse the economic attributes of beekeeping.

The number of beekeepers in Karlovačka county in 2007. was 179 with total of 17.636 beehives [3]. Beekeepers were interviewed during the regular meeting of the Beekeepers Association. Forty-five beekeepers were interviewed which is a representative sample of beekeepers in Karlovačka county.

Beekeepers were categorized as hobby beekeepers (<60), part-time (61–150) and professional beekeepers (>151) based on the number of beehives. There are 56 % of hobby beekeepers, 31 % of part-time beekeepers and 13 % are professional beekeepers.

Fixed assets in beekeeping consist of equipment, beehives and vehicles used in beekeeping (trucks, trailers, personal car). Hobby beekeepers generate 5.031,55 € of total income per year with 52 average beehives per beekeeper. They achieve the highest selling price an average of 3,20 € per kilo for their honey. Part-time beekeepers generate 9.875,74 € total income per year. The average number of beehives per part-time beekeeper is 110 and they achieve a selling price of 2,69 € per kilo. Professional beekeepers generate 26.681,36 € total income per year with an average number of 329 beehives per beekeeper. Their actual selling price, on average, is 2,07 €.

Key words: beekeeping, value of property, income, honey, selling price, direct selling

SAŽETAK

Pčelarstvo u Hrvatskoj ima dugu tradiciju. Postoje povoljni klimatski i vegetacijski uvjeti za razvoj pčelarstva. Broj registriranih pčelara u Republici Hrvatskoj je 3.404 sa 313.978 košnica. Najviše pčelara su poluprofesionalni pčelari (53 %), zatim hobi pčelari (37 %), a najmanje ima profesionalnih pčelara sa 11 % [3]. Proizvodnja u pčelarstvu vezana je uglavnom na obiteljska poljoprivredna gospodarstva [5]. Karlovačka županija, koja se nalazi u centralnom dijelu Hrvatske, izabrana je za ekonomsku analizu pčelarske proizvodnje.

U Karlovačkoj je županiji u 2007. godini registrirano 179 pčelara sa 17.636 košnica [3]. Pčelari su intervjuirani tijekom redovnih sastanaka pčelarske udruge. Osnovni uzorak čini 45 pčelara, taj broj predstavlja reprezentativni uzorak pčelara u Karlovačkoj županiji.

Pčelari su podjeljeni u tri skupine ovisno o broju košnica. U prvu skupinu spadaju hobi pčelari (< 60 košnica), drugu skupinu čine poluprofesionalni pčelari (61 do 150 košnica), a treću skupinu profesionalni pčelari (> 151 košnica). Od ukupnog broja 56 % je hobi pčelara, 31 % poluprofesionalnih pčelara i 13 % profesionalnih.

Osnovna sredstva u pčelarstvu čine pčelarska oprema, košnice i vozila koja se koriste u pčelarstvu (prikolice, kamioni i osobni automobili). Hobi pčelari ostvaruju 5.031,55 € ukupnih prihoda godišnje. Sa prosječnim brojem od 52 košnice po pčelaru hobi pčelari ostvaruju 3,20 € po kilogramu meda. Poluprofesionalni pčelari ostvare 9.875,74 € ukupnih prihoda godišnje. Prosječan broj košnica kod poluprofesionalnih pčelara je 110 košnica, prodajnu cijenu za kilogram meda ostvare 2,69 €. Profesionalni pčelari ostvare 26.681,36 € ukupnog prihoda sa prosječnim brojem od 329 košnica po pčelaru. Prosječna prodajna cijena meda iznosi 2,07 €.

Glavne riječi: pčelarstvo, osnovna sredstva, prihod, med, prodajna cijena, izravna prodaja

DETALJNI SAŽETAK

Pčelarstvo u Hrvatskoj ima dugu tradiciju. Pčelarstvom se bavi širok spektar ljudi različitih zanimanja. Postoje povoljni klimatski i vegetacijski uvjeti za razvoj konvencionalnog i ekološkog pčelarstva. Posljednjih godina postoji pozitivan trend povećanja broja pčelara i broja košnica. Broj registriranih pčelara u Republici Hrvatskoj je 3.404 sa 313.978 košnica. Najviše pčelara su poluprofesionalni pčelari (53 %), zatim hobi pčelari (37 %), a najmanje ima profesionalnih pčelara sa 11 % [3]. Proizvodnja u pčelarstvu vezana je uglavnom na obiteljska poljoprivredna gospodarstva [5]. Karlovačka županija, koja se nalazi u centralnom dijelu Hrvatske, izabrana je za ekonomsku analizu pčelarske proizvodnje.

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Osnovna sredstva u pčelarstvu čine pčelarska oprema, košnice i vozila koja se koriste u pčelarstvu (prikolice, kamioni i osobni automobili). Vrijednost osnovnih sredstava kod hobi pčelara je 5.939,60 € i ostvaruju 5.031,55 € ukupnih prihoda godišnje. Sa prosječnim brojem od 52 košnice po pčelaru hobi pčelari ostvaruju 3,20 € po kilogramu meda. Osnovna sredstva kod poluprofesionalnih pčelara iznose 12.827,00 €, a ostvare 9.875,74 € ukupnih prihoda godišnje. Prosječan broj košnica kod poluprofesionalnih pčelara je 110 košnica, prodajnu cijenu za kilogram meda ostvare 2,69 €. Profesionalni pčelari sa 37.491,77 € vrijednosti osnovnih sredstava ostvare 26.681,36 € ukupnog prihoda sa prosječnim brojem od 329 košnica po pčelaru. Prosječna prodajna cijena meda iznosi 2,07 €.

INTRODUCTION

Beekeeping in Croatia has a long tradition. There are favourable climate and vegetation conditions for development of beekeeping in Croatia. The number of registered beekeepers there is 3.404 with total of 313.978 beehives. Most of them are part-time beekeepers (53 %), hobby beekeepers comprise 37 % and professional beekeepers represent the smallest part with 11 % [3]. Beekeeping production is mainly organized on family farms. "Small scale" beekeepers represent more than 75

% of the total number of beekeepers in Croatia and 25 % of total number of bee hives [2]. Presently, the market for honey in Croatia is not well organized with only 30 to 40 percent of all honey being marketed in a formal manner. The greater part of the production is marketed through the unregistered channels (sale at the home door, at the peasants' green markets, etc.) [4].

The number of beekeepers in Karlovačka county in 2007. was 179 with total of 17.636 beehives. Karlovačka county, in the central part of Croatia, was chosen to analyse the economic attributes of beekeeping.

MATERIALS AND METHODS

Forty-five beekeepers from Karlovačka County were surveyed during regular meeting of the Beekeepers Association in March 2008. Questionnaires were given to the beekeepers, questions were shown on the screen threw power point and separately explained. Respondents were asked questions regarding their property, honey production, production expenses.

All statistics were calculated using Microsoft Excel and Statistica 7.1 software.

RESULTS AND DISCUSSION

From forty-five beekeepers there are 56 % of hobby beekeepers with less than 60 bee hives, 31 % of part-time beekeepers with 61–150 bee hives, and 13 % are professional beekeepers with more than 150 beehives (table 1.). The maximum number of bee hives registered within those surveyed is 400. Štefanić et al [6] in research of beekeeping in Croatia also divided beekeepers in tree groups regarding to number of bee hives.

Hobby beekeepers with average number of 52 bee hives produce 1.308,24 kg. of honey average per beekeeper. Part-time beekeepers with average 110 bee hives produce 3.201,86 kg. of honey, and professional beekeepers with 329 average bee hives have 10.441,67 kg. average per beekeeper (table 2.). Barlović [1] in his research presented average yield per bee hive for hobby beekeepers 23,41 kg, part-time beekeepers 31,90 kg, and professional beekeepers 34,83 kg., which is less than presented in table 2. in our research.

Hobby beekeepers have the largest average value of fixed assets per hive (174,02 €), then professional beekeepers (160,14 €) and part-time beekeepers (149,03 €). Bee hives form the greatest part of fixed assets.

Material and energy takes a significant part in the structure of production expenses. Hobby beekeepers use dominantly low cost technology and invest more in labour per hive, it is very similar for part-time beekeepers

Table 1. Beekeepers according to number of bee hives
 Tablica 1. Broj pčelara prema broju košnica

Number of bee hives Broj košnica	Number of beekeepers Broj pčelara	Share % Udjel
Less than 60	25	55,56
61 - 150	14	31,11
More than 150	6	13,33
TOTAL	45	100,00

Table 2. Average number of bee hives, average and total honey production per category
 Tablica 2. Prosječan broj košnica, prosječna i ukupna proizvodnja meda po skupinama

	Average number of bee hives Prosječan broj košnica	Average yield of honey per hive Prosječan prinos po košnici	Average honey production Prosječna proizvodnja meda po pčelaru
Less than 60	52	37,83 ^a	1.308,24
61 - 150	110	44,83	3.201,86
More than 150	329	54,42 ^b	10.441,67

a:b p<0,05

Table 3. Average value of fixed assets per hive and per category (€)
 Tablica 3. Prosječna vrijednost osnovnih sredstava po košnici i po skupini (€)

	Equipment Oprema	sd sd	Bee hives Košnice	sd sd	Vehicles Vozila	sd sd	Total Ukupno	sd sd
Less than 60	42,42	58,95	97,87	42,12	84,31	59,29	174,02	110,05
61 - 150	19,37	13,84	87,16	55,58	54,09	31,08	149,03	79,68
More than 150	25,93	15,41	101,77	39,83	38,92	14,27	160,14	66,04

who have more bee hives and better technology. Labor expenses are highest for hobby beekeepers, than for part-time beekeepers. Professional beekeepers have the biggest expenses in material and energy, mostly medical treatment and queens as material expenses; and gas, electricity and water as energy expenses. Hobby beekeepers have the highest total production expenses per kilo of honey. Professional beekeepers produce honey with the lowest expenses (graph 1.).

Most of the income beekeepers generate from selling honey. Other bee products, such as pollen, wax, propolis, package bees, have marginal contribution to total income. In this study beekeepers oriented their enterprises on production of honey. They generate extra income mainly from selling package bees and from subsidies in

beekeeping (table 4.). This extra income is 21,22 € for hobby beekeepers, 13,71 € part-time beekeepers, and 20,67 € for professional beekeepers. Beside the highest production expenses (graph 1.) hobby beekeepers have the highest total income 137,27 € per hive. Main reason is their higher selling price through direct selling.

Our research shows that the income in this region (table 4.) is less than the income of the beekeepers in West Hercegovina, which is between 130 – 151 € [5].

Income presented per kilo of honey have the same decreasing trend as it is shown in table 4. Hobby beekeepers can achieve 3,84 €/kg, part-time beekeepers 3,08 €/kg, while professional beekeepers only 2,58 €/kg total income (graph 2.).

Through direct selling hobby beekeepers can achieve

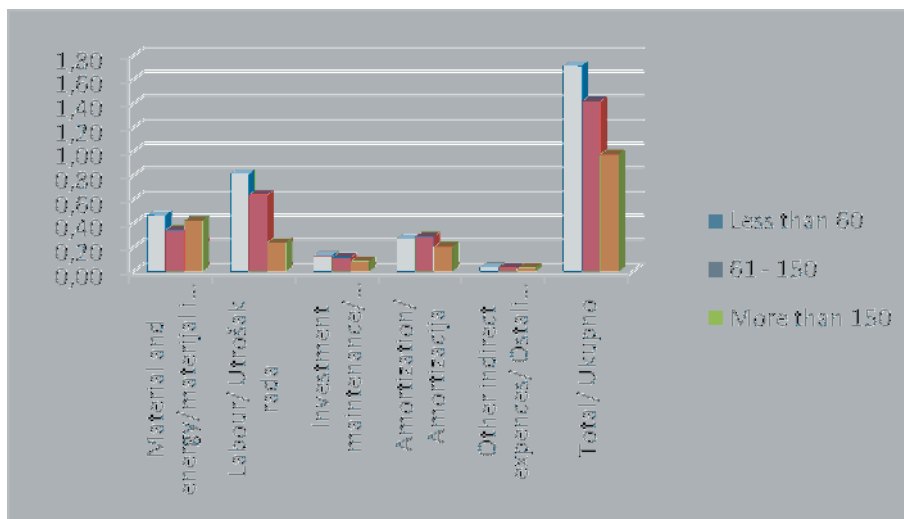


Figure 1. Production expenses structure per kilo and per category (€)
 Graf 1. Struktura troškova proizvodnje po kilogramu meda i po skupinama (€)

Table 4. Income from honey and total income per hive and per category (€)
 Tablica 4. Prihod od meda i prihod ukupno po košnici i po skupinama (€)

	Income from honey		Total income	
	Prihod od meda		Ukupni prihod	
	average	sd	average	sd
Less than 60	116,05	48,23	137,27	56,44
61 - 150	100,97	48,02	114,68	52,81
More than 150	91,64	49,30	112,31	46,58

significantly bigger gross margin and revenue than part-time and professional beekeepers. Statistically significant differences could be discovered between values of gross margin, revenue and income per kilo.

Despite of smaller number of bee hives and lower yield per hive direct selling has stronger influence on economic efficiency than higher production level, with bigger number of bee hives and higher yield per hive, if sold in retail (table 6.).

Based on production expenses and labour expenses hobby beekeepers have 1,75 times higher basic price than professional beekeepers. Differences of basic prices achieved by hobby beekeepers and part-time beekeepers are not significant.

Direct selling has strong influence on selling price. Hobby beekeepers have possibility to sell all of their honey production through direct selling. Part-time beekeepers can also sell most of their honey through this channel, but in the case of professional beekeepers direct selling has

minor influence on selling price.

All categories produce honey economically efficiently. The reduced material and energy expenses (lower investment, in selected queens, wax foundation, sugar and fuel) cause the higher economic efficiency of part-time beekeepers. However, in long term it can have a negative effect on production.

CONCLUSIONS

The forty-five beekeepers interviewed in this research form a representative sample of beekeepers in Karlovačka County. Beekeeping technology and economic behaviour are relevant to beekeeping production in Croatia.

Hobby beekeepers and part of part-time (small scale) beekeepers sell all or most of their production directly. Results of direct selling are significantly bigger income, revenue and income per bee hive and per kilo of honey. Fixed assets have no significant differences between categories, so differences in revenue and income are

Table 6. Gross margin, revenue and income per hive and per category (€)
 Tablica 6. Doprinos pokrića, dohodak i dobitak po košnici i po skupinama (€)

	Gross margin Doprinos pokrića		Revenue Dohodak		Income Dobitak	
	average	sd	average	sd	average	sd
Less than 60	116,38	55,72	96,21	52,52	57,68	39,70
61 - 150	98,34	46,84	80,87	44,28	49,89	33,77
More than 150	77,64	30,28	55,70	27,18	44,06	20,23

Table 7. Average basic price and selling price per kilo and per category (€)
 Tablica 7. Prosječna proizvodna i prodajna cijena kilograma meda po skupinama (€)

	Basic price Proizvodna cijena		Selling price Prodajna cijena	
	average	sd	average	sd
Less than 60	1,71 ^a	0,65	3,20	0,84
61 - 150	1,42	0,59	2,69	0,41
More than 150	0,98 ^b	0,49	2,07	0,38

a:b p<0,05

Table 8. Productivity, economic efficiency per category
 Tablica 8. Proizvodnost i ekonomičnost po skupinama

	Productivity Proizvodnost		Economic efficiency Ekonomičnost	
	average	sd	average	sd
Less than 60	3,50	1,51	1,77	0,58
61 - 150	5,49	4,03	1,89	0,55
More than 150	8,72	1,65	1,73	0,28

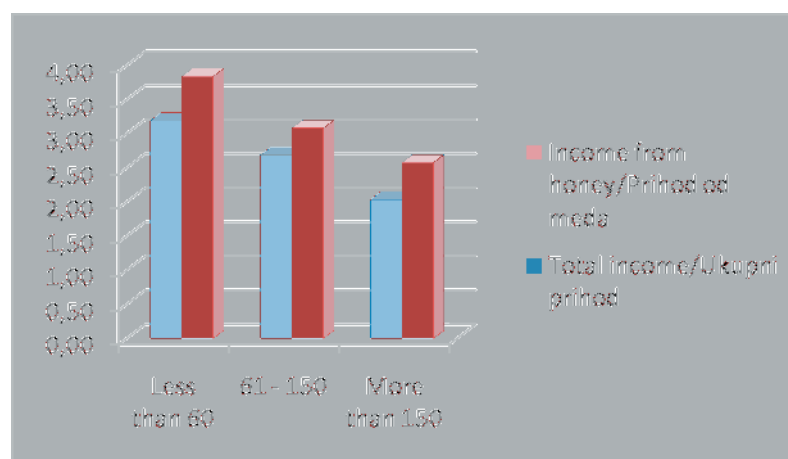


Figure 2. Income from honey and total income per kilo and per category (€)
 Graf 2. Prihod od meda i ukupni prihod po kilogramu meda po skupinama (€)

determined mostly by selling price. All beekeepers are economically efficient on gross margin level, but if all production expenses are counted, than for full economic efficiency 60 bee hives and more than 38 kilo of honey per bee hive needed.

That kind of results indicates the possibility of maintaining the same structure of beekeepers and their production in the same economical conditions.

High percentage of small scale beekeepers and direct selling, as characteristics of Croatian beekeeping, can adopt worse economic conditions for average yield per bee hive.

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