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ORGANIC LIVESTOCK FARMING IN REPUBLIC OF CROATIA- STATE AND PERSPECTIVE DEVELOPMENT

SUMMARY

Recently, in the Republic of Croatia an increase in organic farming was observed. The aim of this paper is to present the state and perspectives of organic livestock farming development in Croatia during recent five years. There has been an increase in the number of organic farmers by 114% and the number of organic processors by 52.28%. The used agricultural land decreased by 1.54%, while the land under organic production in total used agricultural land increased, which is 6.94%. Areas sown with crops important for organic livestock feeding increased the most for rapeseed and green forage from arable land and gardens and a decrease was observed in oats. The largest increase regarding livestock was in the number of Equidae and sheep and goats, while the only decrease was observed in poultry. The largest increase was also found for sheep meat, beef and pork, while in dairy production the largest increase was in goat milk, as well as production of cheese. Expansion of organic production is observed in the recent five years in Croatia. This contributes to the growing interest in organic production, as indicated by increases in the analyzed indicators in the organic livestock sector.

Keywords: organic livestock farming; the Republic of Croatia; state and perspectives of development.

INTRODUCTION

Organic agriculture in the world has been the fastest growing branch of agricultural production in recent years. The Republic of Croatia has recorded significant increase in organic agriculture with the same trend in organic livestock farming. The reasons for the abovementioned can be seen through Croatia's outstanding natural resources as well as their conservation and the development of organic agriculture, which all contribute to the development of a country based on natural and ethical principles, without which no development is complete

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(Senčić *et al.*, 2011). Favorable climatic conditions, the possibility of producing cheap and good quality food, large quantities of floorcloth, smaller financial investments and the possession of certified organic land areas are very good prerequisites for the spread of organic livestock farming in the Republic of Croatia (Antunović, 2011; Gugić *et al.*, 2017). The aim of organic livestock farming is to obtain high-quality food for human consumption, but also to ensure animal welfare and environmental protection (Senčić *et al.*, 2011). Organic livestock production encourages the use of natural sources in a particular breeding area, grazing, open barns and canopies, which ensures better adaptation of animals to environmental conditions (Antunović, 2011). In the common market of the European Union, the advantages of the Republic of Croatia are, among other things, reflected in the possibility of developing organic agriculture, including organic livestock farming, and through the integration with tourism, as well as the protection of native plant and animal genetic resources and the conservation of biodiversity. According to the data of the Croatian Chamber of Economy, cited in the Ministry of Agriculture's Annual Report on the State of Agriculture in year 2018, it was pointed out that the annual value of the Croatian market of organic products is around 100 million EUR, which is certainly not negligible, while the share of consumption of organic products in total consumption is 2.2%. Thus, the aim of this paper is to present the state and perspectives of the development of organic livestock farming in the Republic of Croatia, by analyzing the period of the recent five years.

STATE AND PERSPECTIVES OF DEVELOPMENT OF ORGANIC LIVESTOCK FARMING IN THE REPUBLIC OF CROATIA

In the Republic of Croatia in the recent five years there has been an increase in the number of organic farmers by 114% and in the number of organic processors by 52.28%.

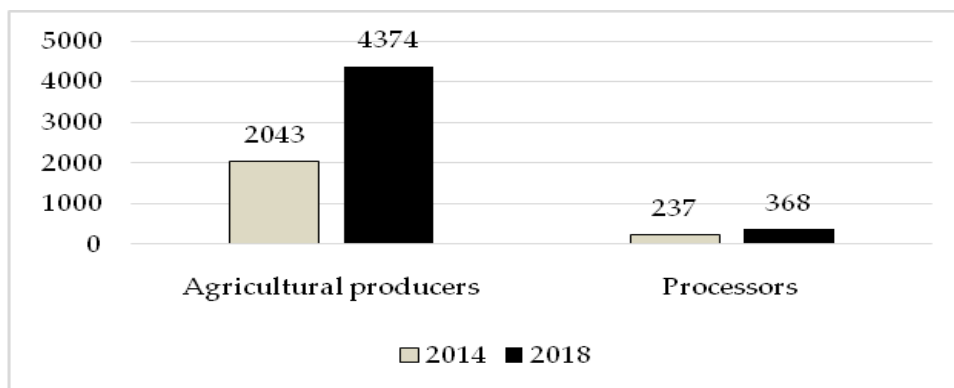


Figure 1. Number of organic agricultural entities in the Republic of Croatia in the last five years (Croatian Bureau of Statistics, 2019).

During the recent five years, the first five entities in the processing and preserving of meat and its products have been registered in the Republic of Croatia. Likewise, the number of registered producers of plant and animal oils and fats were also increased significantly by 121.62%, as well as the number of dairy producers by 37.50%.

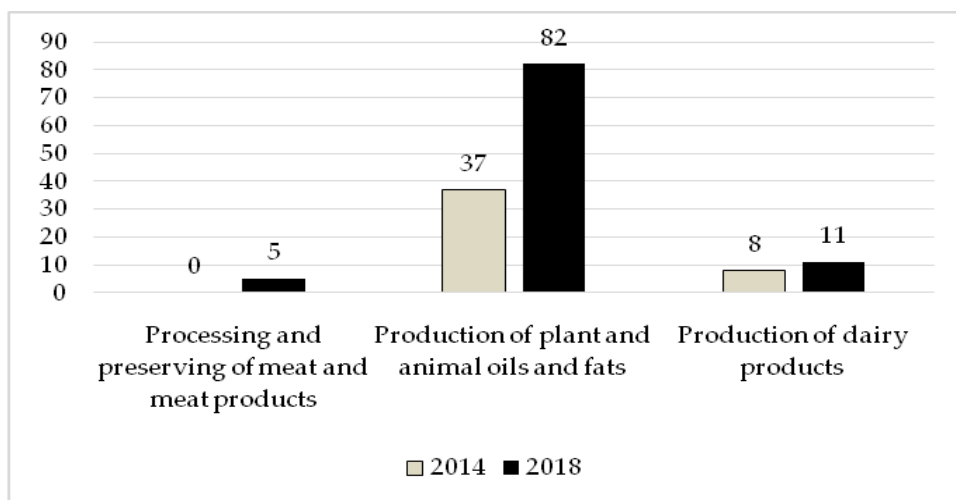


Figure 2. Number of processors of organic livestock products (Croatian Bureau of Statistics, 2019).

Table 1. The area of utilized agricultural land and area under organic production in the last five years in the Republic of Croatia (Croatian Bureau of Statistics, 2019).

Year	Agricultural land used, (ha)	Areas under organic production, (ha)	Share of areas under organic production in total utilized agricultural area, %
2014	1 508 885	50 054	3.32
2015	1 537 629	75 883	4.94
2016	1 546 019	93 814	6.07
2017	1 496 663	96 6185	6.46
2018	1 485 645	103 166	6.94
Difference (2014-2018), %	- 1.54	+ 51.48	

The area of utilized agricultural land in the Republic of Croatia has decreased by 1.54% in the recent five years, while the area under organic production has increased significantly from 50.054 ha to 103.166 ha, which is an increase of 51.48% (Table 1). In the recent five years there has also been an increase in the share of areas under organic production in total utilized agricultural area from 3.32% in 2014 to 6.94% in 2018. Although significant

increase of areas under organic production in total utilized agricultural area in the Republic of Croatia has been identified in the recent five years, although anticipated increase from the Action Plan of the Ministry of Agriculture has not yet been fully realized, where an increase of 8% is expected by 2016. The Ministry of Agriculture of the Republic of Croatia in the year 2011 adopted an Action plan of development of organic agriculture with the objective to accelerate the development of organic livestock farming, and to ensure supply primarily the Croatian market, and also ensure the placement of organic products abroad. According to Antunović *et al.* (2016) limiting factors in the development of organic agriculture are depopulation of rural areas, unfavorable educational structure, insufficient education of farmers and consumers of organic products, problems with unresolved land ownership along with numerous cropped and scattered land areas as well as mined areas.

Table 2. Total area of organic crops from arable land most commonly used in livestock feeding and their organic production in the recent five years in the Republic of Croatia (Croatian Bureau of Statistics, 2019).

Crop	Surface, ha					Trend, %
	2014	2015	2016	2017	2018	
Arable land and gardens	27 459	34 281	44 147	44 083	50 281	+83.11
Wheat and spelt	3 654	4 680	6 011	4 785	6 376	+74.49
Barley	1 081	783	1 487	1 351	1 358	+7.10
Oat	1 235	905	1 557	0 418	1 108	-10.28
Corn, dry grain	1 768	2 174	2 185	2 506	3 102	+75.80
Rapeseed	1 293	1 034	2 421	3 699	4 079	+215.47
Sunflower	1 520	1 335	1 438	2 175	2 112	+38.95
Soybean	1 339	2 607	2 563	2 826	2 286	+70.72
Green forage from arable land and gardens	10 023	12 221	16 860	16 248	20 002	+99.56

Analysis of Tables 2 and 3 viewed crops (agricultural crops) used in organic farming for animal feeding which plays a significant part in composition of their diets. It can be seen that the largest increase in the area over the past five years was sown with rapeseed (by 215.47%) and the area under green forage from arable land and gardens increased by 99.56%, while the area under oats decreased by 10.28%. This has been influenced by the various incentives for organic production, and green payments. It is also evident that production has increased in all prominent crops (agricultural crops). According to the analysis of production over the past five years, the largest increase was recorded for maize (dry grain) by 395.36%, soybeans by 395.05% and wheat and spelt by 380.28%.

Table 3. Total organic production of crops (agricultural crops) in the last five years in the Republic of Croatia (Croatian Bureau of Statistics, 2019).

Crop	Production, t					Trend, %
	2014	2015	2016	2017	2018	
Arable land and gardens	71 889	102 694	149 698	149 535	144 563	+101
Wheat and spelt	4 493	11 664	19 459	17 416	21 579	+380.28
Barley	3 375	2 480	3 409	4 497	4 114	+21.90
Oat	1 474	1 777	3 437	3 184	2 206	+49.66
Corn, dry grain	4 285	11 921	18 273	17 295	21 226	+395.36
Rapeseed	2 751	2 309	4 953	8 877	8 898	+223.45
Sunflower	1 900	2 278	3 044	6 279	6 047	+218.26
Soybean	1 130	5 839	6 145	7 493	5 594	+395.05
Green forage from arable land and gardens	44 978	52 467	80 929	74 080	88 923	+97.71

Table 4 shows the number of livestock heads in organic farming by species in the recent five years in the Republic of Croatia. The largest increase was recorded in the number of Equidae (by 720.60%) and in the number of sheep and goats by 187.30% and 170.55%, respectively. The only decrease was in the number of poultry (by 26.38%). The reason for that is the inclusion of grant for organic production, as well as the inclusion of grants related to production.

Table 4. Number of heads of livestock in organic farming by species in the recent five years in the Republic of Croatia (Croatian Bureau of Statistics, 2019).

Species	Year					Trend, %
	2014	2015	2016	2017	2018	
Cattle	7 308	7 002	14 442	17 226	19 613	+ 168.38
Pigs	961	1 114	1 083	1 468	1 887	+ 96.36
Sheep	21 690	23 774	50 135	54 583	62 315	+ 187.30
Goats	1 552	2 163	3 080	3 381	4 199	+ 170.55
Poultry	2 540	2 093	3 388	2 174	1 870	- 26.38
Equidae	291	265	1 753	1 929	2 388	+ 720.60
Bee colonies	3 649	3 418	2 065	1 721	2 022	- 44.59

The analysis of the data presented in Table 5 shows a significant trend of increasing the majority of organic animal products in the past five years in the Republic of Croatia, with the exception of the organic honey, which production decreased by 48.33%. The largest increase was found for sheep meat, beef and pork. Analyzing the production of organic milk, the largest increase was in the

production of goat milk, and significant increase was observed in the production of cheese.

The increase in the production of organic animal products is also influenced by the introduction of various grants, as well as the increased interest in organic products purchase.

Table 5. Organic animal products in the recent five years in the Republic of Croatia (Croatian Bureau of Statistics, 2019).

Product, t	Year					Trend, %
	2014	2015	2016	2017	2018	
Meat*, total	109	1 200	1 689	1 627	2 185	+ 1 904.6
Beef	75	811	1 110	1 133	1 456	+ 1 841.0
Pork	10	60	91	57	141	+ 1 310.0
Sheep meat	22	316	474	424	571	+ 2 495.5
Goat meat	2	13	14	13	17	+ 750.0
Milk, total	1 782	6 000	5 163	5 783	3 094	+ 73.63
Cows' milk	1 700	5 947	5 023	5 671	2 846	+ 67.41
Sheep milk	51	-	38	28	73	+ 43.14
Goat milk	31	40	102	84	175	+ 464.52
Cheese	4	13	8	7	43	+ 975.0
Table eggs, peaces	65 000	117 775	246 890	206 000	183 000	+ 181.54
Honey	60	48	47	29	31	- 48.33

*All kinds of meat included meat from younger categories of named animal species

For further significant development of organic livestock farming, it is crucial to address, apart from land restrictions, a difficulty in procuring good quality breeding material originating from organic farming and good quality organic feedstuffs for balancing animal rations, especially in highly demanding production stages (gravidity, lactation). Insufficient promotion, undeveloped market, misuse of the "ECO" label for the purpose of product promotion, and insufficient education of farmers and consumers of organic animal products are important facts that should be eliminated as soon as possible for the purpose of development of organic livestock farming. The perspective of organic livestock farming development in Croatia is very good. The richness of natural resources, regulated legislation on organic agriculture and incentive for the development of environmentally friendly tourism related to the revitalization of rural areas, along with initiatives for introduction of "smart villages", as well as various incentive of the Ministry of Agriculture for organic production are good support for the further development of organic livestock farming in Croatia. The large number of protected areas and the introduction of GMO-free zones by almost all Croatian counties are also advantages for the development of organic livestock farming in Croatia. In addition, there is a growing demand for organic animal products not only in Croatia but also more widely, which also contributes to the increased

interest in this production and contributes to its higher quality perspective for development.

CONCLUSIONS

An analysis of organic livestock farming in the recent five years in the Republic of Croatia shows the expansion of this production, some difficulties, and significant advantages that contribute to its overall positive image. This has also contributed to the growing interest of this production, which is indicated by significant increase of analyzed indicators, not only by farmers but also by consumers of organic animal products, as well as by those users whose perception of environmental protection and biodiversity are especially emphasized.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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