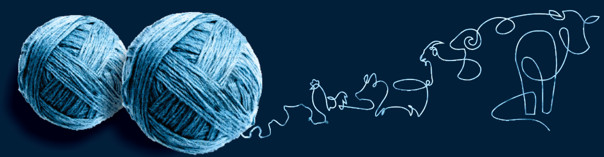
12th INTERNATIONAL SYMPOSIUM

MODERN TRENDS IN LIVESTOCK PRODUCTION



PROCEEDINGS

9 -11 October 2019, Belgrade, Serbia

Institute for Animal Husbandry
Belgrade - Zemun, SERBIA

12th INTERNATIONAL SYMPOSIUM
MODERN TRENDS IN LIVESTOCK PRODUCTION

PROCEEDINGS

9 -11 October 2019, Belgrade, Serbia

EDITORIAL COUNCIL

Prof. Dr. Giacomo Biagi, Faculty of Veterinary Medicine, University of Bologna,Italy
Prof. Dr. Martin Wähner, Faculty of Applied Sciences, Bernburg, Germany
Dr. Milan P. Petrović, Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. Dragana Ružić-Muslić, Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. Radica Đedović, Faculty of Agriculture, University of Belgrade, Serbia
Prof. Dr. Lidija Perić, Faculty of Agriculture, University of Novi Sad, Serbia
Dr Maya Ignatova, Institute of Animal Science, Kostinbrod, Bulgaria
Prof. Dr. Kazutaka Umetsu, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Japan
Prof. Dr. Dragan Glamočić, Faculty of Agriculture, University of Novi Sad, Serbia
Dr. Marina Selionovna, Russian Scientific Research Institute of Sheep and Goat Breeding, Stavropol, Russia
Prof. Dr. Vigilijus Jukna, Institute of Energy and Biotechnology Engineering, Aleksandras Stulginskis University, Kaunas, Lithuania
Dr. Vesna Krnjaja, Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. Elena Kistanova, Institute of Biology and Immunology of Reproduction „Kiril Bratanov", Sofia,Bulgaria
Prof. Dr. Pero Mijić, Faculty of Agriculture, University of Osijek, Croatia
Prof.Dr. Marjeta Čandek-Potokar, Agricultural Institute of Slovenia, Ljubljana, Slovenia
Prof.Dr. Peter Dovč, Department of Animal Science, Biotechnical Faculty, University of Ljubljana, Slovenia
Dr. Miloš Lukić, Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. Wladyslaw Migdal, University of Agriculture, Krakow, Poland
Dr Ivan Bahelka, National Agricultural and Food Centre – Research Institute for Animal Production, Lužianky, Slovakia
Dr. Vlada Pantelić, Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. Sandra Edwards, School of Agriculture, Food and Rural Development, University of Newcastle,United Kingdom
Prof. Dr. Stelios Deligeorgis, Greece;
Prof. Dr. Hasan Ulker, Turkey
Dr. Catalin Dragomir, National Research and Development Institute for Animal Biology and Nutrition (IBNA Balotesti), Balotesti, Ilfov, Romania

Publisher
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

Editor-in-Chief
Čedomir Radović, PhD, Research associate
Director of the Institute for Animal Husbandry, Belgrade-Zemun

EDITORIAL BOARD
Editor
Zdenka Škrbić, PhD, Principal Research Fellow
Institute for Animal Husbandry, Belgrade-Zemun

Section Editors
Animal Science
Dušica Ostojić-Andrić, PhD, Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Violeta Caro Petrović, PhD, Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Nevena Maksimović, PhD, Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Veselin Petričević, PhD, Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dragan Nikšić, PhD, Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

Feed Science
Zorica Bijelić, PhD, Senior Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Violeta Mandić, PhD, Senior Research Associate

Institute for Animal Husbandry, Belgrade-Zemun, Serbia

Technology and quality of animal products

Prof. Marjeta Čandek-Potokar, PhD
Agricultural Institute of Slovenia, Ljubljana, Slovenia
Nikola Stanišić, PhD, Research Associate
Innovative Center AVEBE U.A., Groningen, Netherlands
Maja Petričević, PhD, Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

Food safety, Veterinary Medicine Science

Aleksandar Stanojković, PhD, Research Associate
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

Language editor
Olga Devečerski, grad.prof

Address of the Editor's office
Institute for Animal Husbandry, Autoput 16, P. Box 23, 11080 Belgrade-Zemun, Republic of Serbia Tel. 381 11 2691 611, 2670 121; Fax 381 11 2670 164;
e-mail: biotechnology.izs@gmail.com; www.istocar.bg.ac.rs

Circulation 150 copies.

The publication of this Proceedings is sponsored by the Ministry of Education and Science of the Republic of Serbia.
The Proceedings is printed by the Institute for Animal Husbandry, Belgrade, 2019

ISBN 978-86-82431-76-3

PATRON

Ministry of Education, Science and Technological Development of the Republic of Serbia

ORGANIZER

Institute for Animal Husbandry
Autoput 16, P. Box. 23,
11080, Belgrade-Zemun, Serbia
Tel: +381 11 2691 611; +381 11 2670 121;
+381 11 2670 541;
Fax: + 381 11 2670 164;

biotechnology.izs@gmail.com
www.istocar.bg.ac.rs

INTERNATIONAL SCIENTIFIC COMMITTEE

CHAIRMAN

Prof. Dr. **Giacomo Biagi,**
Department of Veterinary Medical Sciences, University of Bologna, Italy

SECRETARY

Dr. **Milan P. Petrović,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

MEMBERS

Dr. **Čedomir Radović,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Milan M. Petrović,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. **Martin Wähner,**
Anhalt. University of Applied Sciences, Bernburg, Germany
Dr. **Vesna S. Krnjaja,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. **Marina I. Selionova,**
FSBSI-All-Russian Scientific Research Institute of Sheep and Goat Breeding, Stavropol, Russia
Prof. Dr. **Marjeta Čandek-Potokar,**
Agricultural Institute of Slovenia, Slovenia
Prof. Dr. **Elena Kistanova,**
Institute of Biology and Immunology of Reproduction „Kiril Bratanov“, Sofia, Bulgaria
Dr. **Dragana Ružić-Muslić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Snežana Mladenović Drinić,**
Maize Research Institute „Zemun Polje“, Zemun Polje, Serbia
Dr. **Zdenka Škrbić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. **Radica Đedović,**
University of Belgrade, Faculty of Agriculture, Serbia
Prof. Dr. **Lidija Perić,**
University of Novi Sad, Faculty of Agriculture , Serbia
Prof. Dr. **Wladyslav Migdal,**
Department of Animal Product Technology,
University of Agriculture in Kraków, Poland
Prof. Dr. **Danijela Kirovski,**
University of Belgrade, Faculty of Veterinary Medicine, Serbia

Dr. **Miloš Lukić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Vlada Pantelić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. **Randelin Dmitry Alexandrovich,**
Faculty of Biotechnology and Veterinary Medicine,
Volgograd State Agricultural University, Russia
Assoc. Prof. **Itskovich Aleksandr Yuryevich,**
Faculty of Biotechnology and Veterinary Medicine,
Volgograd State Agricultural University, Russia
Prof. Dr. **Dragan Radojković,**
University of Belgrade, Faculty of Agriculture, Serbia
Prof. Dr. **Milun Petrović,**
University of Kragujevac, Faculty of Agronomy, Serbia
Prof. Dr. **Dragan Glamočić,**
University of Novi Sad, Faculty of Agriculture, Serbia
Prof. Dr. **Snežana Trivunović,**
University of Novi Sad, Faculty of Agriculture, Serbia
Prof. Dr. **Predrag Perišić,**
University of Belgrade, Faculty of Agriculture, Serbia
Prof. Dr. **Zoran Ilić,**
University of Pristina, Faculty of Agricultural Sciences, Lešak, Serbia
Prof. Dr. **Maya Ignatova,**
Institute of Animal Science, Kostinbrod, Bulgaria
Dr. **Ivan Pavlović,**
Scientific Veterinary Institute of Serbia, Serbia
Dr. **Snežana Ivanović,**
Scientific Veterinary Institute of Serbia, Serbia
Prof. Dr. **Vigilijus Jukna,**
Institute of Energy and Biotechnology Engineering,
Aleksandras Stulginskis University, Lithuania
Dr. **Giuseppe Bee,**
Agroscope Posieux, Posieux, Switzerland
Dr. **Zorica Bijelić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Violeta Mandić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. **Yusup A. Yuldashbaev,**
Russian State Agrarian University, Moscow, Timiryazev Agricultural Academy,
Faculty of Animal Science and Biology, Russia

Prof. Dr. **Pero Mijić,**
Josip Juraj Strossmayer University of Osijek,
Faculty of Agrobiotechnical Sciences, Osijek, Croatia
Prof. Dr. **Zoran Luković,**
University of Zagreb, Faculty of Agriculture,
Department of Animal Science and Technology, Croatia
Prof. Dr. **Ivan Radović,**
University of Novi Sad, Faculty of Agriculture, Serbia
Prof. Dr. **Aleksandar Simić,**
University of Belgrade, Faculty of Agriculture, Serbia
Prof. Dr. **Nikola Pacinovski,**
Ss Cyril and Methodius University in Skopje,
Institute of Animal Science, North Macedonia
Prof. Dr. **Yessenbay Islamov,**
Kazakh National Agrarian University, Kazakhstan
Prof. Dr. **Yalçin Bozkurt,**
Isparta University of Applied Science,
Department of Animal Science, Isparta, Turkey
Prof. Dr. **Slavča Hristov,**
University of Belgrade, Faculty of Agriculture, Serbia
Prof. Dr. **Ricmar P. Aquino,**
University President, Isabela State University, Philippines
Prof. Dr. **Rosa Nieto,**
Departament of Physiology and Biochemistry of Animal Nutrition Estacion
Experimental del Zaidín, CSIC Armilla, Granada, Spain
Dr. **Juan M. García Casco,**
Departamento Mejora Genética Animal, INIA, Madrid, Spain
Dr. **Violeta Anđelković,**
Maize Research Institute „Zemun Polje“, Zemun Polje, Serbia
Dr. **Slavica Stanković,**
Maize Research Institute „Zemun Polje“, Zemun Polje, Serbia
Prof. Dr. **Rui Miguel Carracha Charneca,**
Universidade de Évora, Escola de Ciências e Tecnologia,
Instituto de Ciências Agrárias e Ambientais Mediterrânicas (ICAAM),
Évora, Portugal
Dr. **Ivan Bahelka,**
NPPC - Research Institute for Animal Production Nitra, Slovakia
Dr. **Jean-Louis Peyraud,**
INRA, UMR PEGASE, France

ORGANIZING COMMITTEE

CHAIRMAN

Dr. **Milan P. Petrović,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

SECRETARY

Dr. **Veselin Petričević,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

MEMBERS

Dr. **Dušica Ostojić Andrić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Violeta Caro Petrović,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Prof. Dr. **Vladan Bogdanović,**
University of Belgrade, Faculty of Agriculture, Serbia
Prof. Dr. **Nenad Đorđević,**
University of Belgrade, Faculty of Agriculture, Serbia
Assoc. Prof. **Tanja Petrović,**
University of Belgrade, Faculty of Agriculture, Serbia
Dr. **Aleksandar Stanojković,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Nevena Maksimović,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Dragan Nikšić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Maja Petričević,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Dr. **Nikola Delić,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

SYMPOSIUM SECRETARIAT

CHAIRMAN

Dr. **Veselin Petričević,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

MEMBERS

Slavko Maletić, grad. econ.
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Olga Devečerski, grad. prof.
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Arch **Stanislav Marinkov,**
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Marina Lazarević, Bsc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Nenad Mićić, Msc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Bogdan Cekić, Msc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Miloš Marinković, Msc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Marija Gogić, Bsc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Vladimir Živković, Bsc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Nenad Stojiljković, Bsc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Nikola Molerović, Bsc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia
Ivan Ćosić, Bsc,
Institute for Animal Husbandry, Belgrade-Zemun, Serbia

Address:

Institute for Animal Husbandry,
Autoput 16, P. Box 23,
11080, Belgrade-Zemun, Serbia

Tel:
+381 11 2691 611
+381 11 2670 121
+381 11 2670 541
Fax:
+381 11 2670 164

E-mail: biotechnology.izs@gmail.com
www.istocar.bg.ac.rs

CONTENTS

INVITED PAPERS

ORALLY PRESENTED PAPERS

POSTER SECTION I

POSTER SECTION II

POSTER SECTION III

Proceedings of the 12th International Symposium
Modern Trends in Livestock Production
October 9-11, 2019

PREFERENCES OF CONSUMERS' FROM SERBIA TOWARD ORGANIC EGGS

Tolimir Nataša[1], Maslovarić Marijana[1], Škrbić Zdenka[2], Rajković Borislav[3], Radišić Robert[1], Lukić Miloš[2]

[1]Institute for Science Application in Agriculture, Bulevar Despota Stefana 68b, 11000, Belgrade, Republic of Serbia
[2]Institut for Animal Husbandry, Autoput 16, 11080 Belgrade-Zemun, Republic of Serbia
[3]Faculty of Agriculture, Nemanjina 6, 11080, Belgrade-Zemun, Republic of Serbia
Corresponding author: Nataša Tolimir, ntolimir@ipn.co.rs
Original scientific paper

Abstract: In order to examine consumers' preferences toward eggs from organic production and their willingness to allocate more money for these eggs, 581 respondents were surveyed in three regions of Serbia (the Belgrade region, the Šumadija and the Western Serbia region, and the Southern and Eastern Serbia region). Through the survey questionnaire, respondents declared themselves whether they are buying organic eggs and how much money they are ready to allocate for this type of eggs. Answers from surveyed respondents who are buying organic eggs were analyzed by gender, age, status, education, monthly income and the region in which they are living. According to the survey results, it can be concluded that in Serbia, there is a very small number of consumers who are buying organic eggs (2.41%), and that all of them are located in the Belgrade region. Furthermore, only 8.34% of consumers were willing to pay 30% higher price for organic eggs, on average for all three regions. Analyzing data within the category of organic eggs consumers, the highest tendency for buying organic eggs was determined for female respondents (76.92%), those with the higher education level (61.54%), the employed respondents (92.31%), the respondents aged from 36 to 55 (61.52%) and the respondents with the highest monthly household income (46.15%). The results of the present study indicate that the percentage of consumers who buy organic eggs in Serbia is very small, it is present only in certain regions and the willingness to pay more for organic eggs is low.

Key words: organic eggs, consumer, survey, regions, Republic of Serbia

Introduction

Statistical data on the organic eggs production in Serbia do not exist, but in the database of organic products producers led by the Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, on the basis of the reports from authorized control organizations for performing the control and certification of this production *(Directorate for National Reference Laboratories, 2019)*, the number of laying hens in the status of organic production is monitored and recorded. According to the data from this database, the number of laying hens increased from 1,079 (2015) to 3,122 (2016), or 4,415 (2017). According to the same data source, observed regionally, in 2017 the largest number of 1079 (2,595) was found in the region of Šumadija and Western Serbia, and in the region of Vojvodina (1,515), while a significantly smaller number was recorded in Belgrade (200) and Southern and Eastern Serbia region (105). When viewed in relation to the total production of 1,759 million eggs in 2017 in Serbia *(Statistical Yearbook of the Republic of Serbia, 2018)* the production of organic eggs is modest, regardless the trend of increasing the number of hens in this production.

In Europe, organic poultry production, in the period from 2007 to 2015, recorded the highest increase (by 108%) within the organic livestock production *(Willer et al., 2017)*. The statistical data indicate a tendency of increasing the number of poultry from "non-cage" systems *(Rakonjac et al., 2017)*, which can be related to the major changes in the legal regulations in the field of animal welfare, sustainable and ecological production, food safety, as well as with increasingly pronounced attitudes and market demands of the customers. According to the *European Commission (2018)* data, the largest share of laying hens in the organic production system is in Denmark (31.1%), Sweden (16.1%), Germany (12%), Austria (11.6%) and Luxembourg (10.5 %).

Market monitoring in Europe in 2017 *(Willer et al., 2019)* has shown that the largest share of organic eggs in the total market value of organic products was in Denmark (32.6%), France (29.6%), Switzerland (26.6% %), Austria (21.6%) and Germany (21%), followed by Finland, the Netherlands, Belgium and Norway (15 to 20%). In Serbia there is no official data on the market share of organic eggs, and according to the research by *Tolimir et al. (2017)* conducted on the Belgrade market, as the largest in the country, organic egg supply is characterized by a small number of producers/suppliers, with sales only in some hyper/super-markets, a relatively small number of specialized organic food stores and several markets with special section for organic products.

According to the research conducted by *Rodić et al. (2010),* in Serbia 26% of table eggs consumers would choose organic eggs, in the case they have the opportunity to choose. On the other hand, according to the research by *Tolimir et*

al. (2017), only 4% of table egg consumers in the City of Belgrade decide to buy organic eggs. According to research by *Vehapi (2015),* the most significant consumer's motivation for purchasing organic food is health. Also, *Perić et al. (2015)* indicated that table egg consumers in Serbia choose organic eggs because they consider these eggs to be better for their health compared to eggs from conventional production. Among the most important reasons restricting or preventing the purchase of organic products *Vehapi (2015)* indicates the price, and *Vlahović and Šojić (2016)* point out that, besides the price, a significant limiting factor is also low purchasing power, which is a consequence of the low income.
The aim of this paper is to determine the consumers' preferences in Serbia toward organic eggs, as compared to eggs from other production systems, as well as consumers' willingness to allocate more money for organic eggs compared to those from conventional production. At the same time, the purpose of the paper is to identify preferences in the group of organic egg consumers depending on the gender, education, status, age and the amount of income.

Material and Methods

Survey questionnaire included 581 consumers' on the territory of the Republic of Serbia, from three regions: Belgrade region (291 respondents), Šumadija and Western Serbia (158 respondents), and Southern and Eastern Serbia (132 respondents) region, out of a total of five, according to the regional division of Serbia *(Statistical Office of the Republic Of Serbia, 2018).*

The structured survey questionnaire consisted of:

a) information about the respondents obtained by completing the offered answers for the following categories: gender (male, female), education (secondary school, higher education), status (student, employed, retired), place of residence (entering), age (less than 18, 26-35, 36-55, 56-75) and the amount of income (30,000-40,000 RSD, 40,000-70,000 RSD and more than 70,000 RSD).

b) questions with the offered answers: 1) 'Which eggs do you usually buy?' - offered answers: eggs from conventional production, eggs from 'traditional' production, organic eggs and eggs from functional food programs (ω-3 fatty acids or selenium enriched omega eggs) etc.; 2) 'How much are you willing to pay more for eggs from organic production?' - offered answers: I am not ready to pay more, I am willing to pay less than 30% and I am willing to pay more than 30%.

For the group of respondents which stated to purchase organic eggs, the structure of customers was established by computing the share of consumers according to the categories, more precisely putting in relation number of buyers according to the individual category (gender, education level, age, income level) with the total number of consumers within this group.

When processing the data, only questionnaires for which the examinees marked the category and answered the question were included in the analysis. Standard methods of analysis in Microsoft Excel program were used.

Results and Discussion

The results related to the consumers' preferences regarding the choice of eggs from different production systems/technologies in different regions of the Republic of Serbia are shown in the Table 1.

Table 1. Consumers' habits when buying table eggs in Serbia

Answers to the question: "Which eggs do you usually buy?"					
Eggs from different production systems	**Branded eggs from conventional production**	**Eggs from traditional production (green market)**	**Organic eggs**	**Eggs from the functional food program**	**Other**
Region					
Belgrade (%)	29.90	54.98	4.12	0.00	11.00
Šumadija and Western Serbia (%)	10.13	84.17	0.00	0.00	5.70
Southern and Eastern Serbia (%)	10.61	81.82	0.00	0.00	7.58
Total (%)	20.14	68.67	2.41	0.00	8.78

By examining the most common consumer preferences in Serbia toward eggs from different production systems/technologies (Table 1), differences depending on the region have been found. In total, the majority of consumers/customers tend to buy eggs from traditional systems at the green market, but it was found that in Belgrade region, only 54.98% of consumers buy eggs from traditional systems (at the green market), while this percentage is much higher the region of Šumadija and Western Serbia - 84.17%. In Belgrade region, a significant share of the consumers choose eggs of certain brand in hyper/super-markets (about 30%), compared to the consumers in the Šumadija and Western Serbia (10.13%) and Southern and Eastern Serbia (10.61%) regions. The share of consumers who decide to buy organic eggs is very low, 2.41% on average in central Serbia, whereby, viewed by regions, it is 4.12%in the region of Belgrade, while there are no consumers of this type of table eggs in the remaining two regions.

Compared to Serbia where there is an extremely small share of organic egg consumers/customers, in Poland consumers are having extremely positive opinion about organic food, and 65% of them stated that they buy organic eggs *(Żakowska – Biemans and Tekien, 2017).* One of the reasons for the low consumers' commitment in Serbia for the purchase of organic eggs may be a limited market offer of organic eggs, to which more attention should be paid in the coming period, especially in Šumadija and Western Serbia region, and the Southern and Eastern Serbia region. Researches world-wide suggest that market chains are considered to be factors that initiate the organic product market *(Rader et al., 2018).* Organic eggs have a significant place throughout European countries with a developed organic market with a share over 20% in Denmark, France, Switzerland, Austria and Germany *(Willer et al., 2019).*

The willingness of egg consumers in Serbia, according to the region, to pay more money for organic eggs is presented in the Table 2.

Table 2. Willingness of egg consumers to pay a higher price for organic eggs

Answers to the question: "How much are you willing to pay more for eggs from organic production?"			
Answers			
Region	I am not willing to pay more %	I am willing to pay more	
		Less than 30%	More than 30%
Belgrade region	28.82	58.78	12.40
Šumadija and Western Serbia region	25.45	66.46	8.09
Southern and Eastern Serbia region	28.79	66.67	4.55

Share of consumers in Serbia who expressed their readiness to allocate more money assets for organic eggs compared to conventionally produced eggs ranged from 71.18 to 74.55%, but those who expressed their readiness to single out more than 30% for organic eggs were in small percentage, ranging from 4.55% in the Southern and Eastern Serbia region to 12.4% in the Belgrade region. Considering that *Tolimir et al. (2018)* established that the price of organic eggs is greater than 2.05 to 3.07 times compared to conventionally produced eggs, i.e. that organic eggs are more expensive than the conventional ones from 104.7 to 207.7%, one can understand the result of this study, according to which only 2.41% of consumers in Serbia are choosing the organic eggs. The higher price of organic eggs is a result of higher production costs, and in Germany the price of organic production is at least twice as large compared to conventional ones *(Schaack et al., 2011).*

Also, it can be stated that in Serbia, the highest percentage of consumers/customers express the willingness to allocate up to 30% more funds for organic eggs, depending on the region from 58.78% to 66.67%. According to the research findings of *Rodić et al. (2010)* consumers in Serbia have shown willingness to single out 20% more money for eggs from “no cage” production systems. It is important to note that some authors point out that the high price of organic food negatively affects consumers' attitudes, which might be considered to be conditionally a barrier when purchasing them *(Lee and Yun, 2015; Vehapi, 2015)*, whereas a number of authors established consumers’ readiness in the EU and in the USA to pay higher price for organic products within a range from 10 to 30% *(Vapa - Tankosić et al., 2017)*.

The results of the questionnaire survey obtained through the analysis within the consumer/customer of organic food group indicate the differences between individual categories regarding their preferences (Table 3).

Among the customers of organic eggs, the proportion of female sex was higher in comparison to male, those with higher education compared to the secondary education, those employed compared to students and pensioners, those aged between 36 and 55 compared to members of the younger and older population, with higher level of income the share of consumers/customers grew.

Table 3. Structure of organic eggs consumers

Structure of organic eggs consumers in Belgrade region	
Characteristic	**%**
Gender	
Male	23.08
Female	76.92
Education	
Secondary school	38.46
Higher education	61.54
Status	
Student	0
Employee	92.31
Pensioner	7.69
Age	
18-25	0
26-35	0
36-55	61.52
55-75	38.46
Monthly income (RSD)	
30,000-40,000	15.38
40,000-70,000	38.46
>70,000	46.15

Šojić (2017) determined that purchasing of organic products in Serbia is influenced by the consumer's life age, education level and the level of income. *Vapa-Tankosić et al. (2017)* point out on the differences among consumers in the willingness to buy organic products, depending on the gender, level of education, age, place of residence, household size and income.

Conclusion

The results of the survey show that although there are some differences between the different regions in the Republic of Serbia, only very small share (2.38%) of consumers/customers in Central Serbia decide to by eggs produced in the organic production system. The reasons may lie in the relatively limited supply of the high-quality organic eggs on the market on the one hand, and on the other hand in the readiness of only a small number of consumers/customers (4.5 to 12% depending on the region) to allocate more than 30% more money for the organic eggs than for the conventionally produced eggs. The analysis of consumers/customers of organic egg suggests that when it comes to the purchase of organic eggs, women commit to it three times more often compared to men, and that the largest number of consumers can be found in the category of employees, with high education and with the highest incomes, which can be perceived as a target group. The increase in counsumers' preferences towards organic eggs would contribute to higher informational and educational level amongst the consumers, as well as the creation of conditions for the organic eggs to become more available to the organic eggs consumers/customers in Serbia. Examination of consumers' attitude to organically produced eggs in Serbia is scarce and in this regard, this paper serves the purpose of establishing the starting point for the development of organic egg market, more broadly the development of organic egg production.

Preference potrošača/kupaca u Srbiji prema jajima iz organske proizvodnje

Tolimir Nataša, Maslovarić Marijana, Škrbić Zdenka, Rajković Borislav, Radišić Robert, Lukić Miloš

Rezime

U cilju ispitivanja preferenci potrošača u Srbiji o jajima iz organske proizvodnje, kao i njihove spremnosti da izdvoje više novčanih sredstava za kupovinu jaja iz ovog sistema proizvodnje anketirano je 581 potrošač u tri regiona (beogradskom regionu, regionu Šumadije i Zapadne Srbije i regionu Južne i Istočne

Srbije). Kroz anketno ispitivanje potrošači su se izjasnili da li kupuju organska jaja i kolika je njihova spremnost da za jaja iz organskog sistema izdvoje više sredstava. Odgovori anketiranih potrošača koji kupuju organska jaja obrađeni su po polu, starosti, statusu, obrazovanju i sredini u kojoj žive. Prema rezultatima anketnog ispitivanja može se konstatovati da u Srbiji među potršačima jaja je veoma mali udeo onih koji kupuju organska jaja (2,41%), kao i da su svi potrošači/kupci regionalno posmatrano iz jednog, odnosno Beogradskog regiona, dok ih nema u preostala dva ispitivanjem obuhvaćena regiona. Spremnost da plate više od 30% za jaja iz organske proizvodnje iskazalo je svega 8,34% potrošača, prosečno za sva tri regiona. Analizom podataka unutar kategorije potrošača organskih jaja najveća opredeljenost za kupovinu organskih jaja konstaovana je kod potrošača ženskog pola (76,92%), sa visokim obrazovnjem (61,54%), kod zaposlenih (92,31%), potrošača starosne dobi od 36 do 55 godina (61,52%) i sa najvećim mesečnim prihodom domaćinstva (46,15%). Rezultati rada upućuju na zaključak da se veoma mali udeo potrošača konzumnih jaja i to samo u pojedinim regionima Srbije opredeljuje za kupovinu organskih jaja, a da je spremnost da plate više za ova jaja niska. Povećanju preferenci potrošača prema organskim jajima doprinela bi bolja informisanost i edukovanje potrošača, kao i stvaranje uslova da organska jaja u pogledu cene i tržišne ponude budu dostupnija potrošačima/kupcima jaja u Srbiji.

Ključne reči: organska jaja, potrošač/kupac, anketa, regioni, Republika Srbija

Acknowledgment

Research was financed by the Ministry of Education and Science Republic of Serbia, the project TR-31033 and the project III 46012.

References

DIRECTORATE FOR NATIONAL REFERENCE LABORATORIES. Ministry of Agriculture, Forestry and Water Management, Republic of Serbia, Retrieved on May 28, 2019 from http://www.dnrl.minpolj.gov.rs/en/dokumenta/dokumenta.html

EUROPEAN COMMISSION 2019): EU Market Situation for Eggs Committee for the Common Organisation of the Agricultural Markets 23 May 2019. Retrieved on May 31, 2019 from https://ec.europa.eu/agriculture/eggs/presentations_en

LEE H.J., YUN Z.S. (2015): Consumers' perceptions of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions toward organic food. Food Quality and Preference 39, 259-267.
PERIĆ L., ĐUKIĆ STOJČIĆ M., MILOŠEVIĆ N., BJEDOV S. (2015): Effect of different housing systems on quality of table eggs. Proceedings of the 4th International Congress New Perspectives and Challenges of Sustainable Livestock Production, Belgrade, Serbia, 558-564.
RAKONJAC S., BOGOSAVLJEVIĆ-BOŠKOVIĆ S., ŠKRBIĆ Z., PERIĆ L., DOSKOVIĆ V., PETRIČEVIĆ V., PETROVIĆ M.D. (2017): Unutrašnji kvalitet jaja kokoši nosilja iz različitih sistema gajenja. Zbornik radova XXII Savetovanja o biotehnologiji, Knjiga 2, 10 -11. mart, Čačak Serbia, 685-690.
RADER L. and FAS EUROPE SPECIALISTS. 2018. EU Organic Boom Brings Opportunities for U.S. Exporters, USDA Foreign Agricultural Services,
Retrieved on October 1, 2018, from https://gain.fas.usda.gov/Recent%20GAIN%20Publications/EU%20Organic%20Boom%20Brings%20Opportunities%20for%20U.S.%20Exporters_Berlin_Germany_2-6-2018.pdf
RODIĆ V., PERIĆ L., PAVLOVSKI Z., MILOŠEVIĆ N. (2010): Competitiveness of table eggs from non-cage housing systems. Biotechnology in Animal Husbandry, 26, 117-128.
SCHAACK D. LENOURD, J., PADEL, S., WILLER, H. (2011): The Organic Market in Europe; IFOAM, Organics International, Bonn, Germany, 2011.
STATISTICAL OFFICE OF THE REPUBLIC OF SERBIA (2018): Regioni u Republici Srbiji 2017 (in Serbian), Statistical office of the Republic of Serbia, Belgrade, Serbia.
STATISTICAL YEARBOOK OF THE REPUBLIC OF SERBIA. 2018. Statistical Office of the Republic of Serbia. Belgrade, Serbia, pp. 217.
ŠOJIĆ S. (2017): Kreiranje brenda organskih poljoprivredno prehrambenih proizvoda u Republici Srbiji. PhD Dissertation. University of Novi Sad, Faculty of Agriculture.
TOLIMIR N., MASLOVARIĆ M., ŠKRBIĆ Z., LUKIĆ M., RAJKOVIĆ B., RADIŠIĆ R. (2017): Consumer criteria for purchasing eggs and the quality of eggs in the markets of the city of Belgrade, Biotechnology in Animal Husbandry, 33, 4, 425-437.
TOLIMIR N., MASLOVARIĆ M., ŠKRBIĆ Z., RAJKOVIĆ B., RADIŠIĆ R., LUKIĆ M. (2018): Attitudes of table egg consumers/purchasers from the city of Belgrade toward organic eggs. International symposium on Animal Science 2018 (ISAS), University of Belgrade Faculty of Agriculture, Institute of Animal Science 22nd-23rd November 2018, Zemun, Belgrade, Proceedings, 194-200.

VEHAPI S. (2015): Istraživanje motiva potrošača koji utiču na kupovinu organske hrane u Srbiji. Ekonomske teme, 53, 1, 105-121.

VLAHOVIĆ B., ŠOJIĆ S. (2016): Istraživanje stavova potrošača o organskim poljoprivredno-prehrambenim proizvodima i njihovim brendovima. Agroekonomika, 70, 33-46.

WILLER H., SCHAACK D., LERNOUD J. (2017): Organic Farming and Market Development in Europe and the European Union. In The World of Organic Agriculture. Statistics and Emerging Trends 2017. (eds H Willer and J Lernourd), pp. 207-244. Research Institute of Organic Agriculture (FiBL), Frick, and IFOAM – Organics International, Bonn.

WILLER H., SCHAACK D., LERNOUD J. (2019): Organic Farming and Market Development in Europe and the European Union. In The World of Organic Agriculture. Statistics and Emerging Trends 2019. (eds H Willer and J Lernourd), pp. 217-243. Research Institute of Organic Agriculture (FiBL), Frick, and IFOAM – Organics International, Bonn.

ŻAKOWSKA-BIEMANS S., TEKIEN A. (2017): Free Range, Organic? Polish consumers preferences regarding information on farming system and nutritional enhancement of eggs: a discrete choice based experiment. Sustainability, 9, 1999.

VAPA-TANKOSIĆ, J., IGNJATIJEVIĆ, S., KRANJAC, M., LEKIĆ S., PRODANOVIĆ R. (2018): Willingness to pay for organic products on the Serbian market. International Food and Agribusiness Management Review: 21 (6), 791 – 801.

CIP- Каталогизација у публикацији
Народна библиотека Србије

636/638(082)(0.034.2)
631/635(082)(0.034.2)

INTERNATIONAL Symposium Modern Trends in Livestock Production (12 ; 2019 ; Beograd)
Proceedings [Elektronski izvor] / 12th International Symposium Modern Trends in Livestock Production, 9 -11 October 2019, Belgrade, Serbia ; [organizer] Institute for Animal Husbandry ; [editor Zdenka Škrbić]. - Belgrade : Institute for Animal Husbandry, 2019 (Belgrade : Institute for Animal Husbandry). - 1 USB fleš memorija ; 1 x 1 x 3 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž 150. - Bibliografija uz svaki rad.

ISBN 978-86-82431-76-3

a) Сточарство -- Зборници б) Пољопривреда -- Зборници

COBISS.SR-ID 279920908

12th INTERNATIONAL SYMPOSIUM
MODERN TRENDS IN LIVESTOCKPRODUCTION
9 - 11 October 2019 - Belgrade, Serbia

PROCEEDINGS

INSTITUTE FOR ANIMAL HUSBANDRY
Autoput 16, P. Box 23, 11080, Belgrade - Zemun, Serbia
www.istocar.bg.ac.rs

ISBN 978-86-82431-76-3