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SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT III

Book of Abstracts



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C O N T E N T :

1. Adam Wasilewski, Marek Wigier – **CONDITIONS FOR ADAPTING FOOD SYSTEMS TO THE PRINCIPLES OF BIOECONOMY IN THE EUROPEAN UNION 1**
2. Aleksandra Vujko, Olgica Zečević Stanojević, Leposava Zečević – **THE IMPACT OF EMPOWERMENT ON MARRIED WOMEN THROUGH SELF-EMPLOYMENT IN RURAL TOURISM . . . 2**
3. Alecsandra Părnuș (Rusu), Eliza Gheorghe, Raluca Mitulescu (Avram), Nicoleta Marin (Ilie), Daniel Ifrim - **NATIONAL RURAL DEVELOPMENT PROGRAMME 2014-2020 3**
4. Alexandru Stratan, Eugenia Lucasenco, Alexandru Ceban – **ANALYSIS OF THE PUBLIC SUPPORT FOR THE LIVESTOCK SECTOR IN THE REPUBLIC OF MOLDOVA. 4**
5. Anamarija Koren, Ana Marjanović Jeromela – **ALTERNATIVE CROPS KNOWLEDGE MANAGEMENT FROM THE STANDPOINT OF SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT 5**
6. Anastasia Morozova, Irina Pavlenko – **TOURISM IN THE SUSTAINABLE DEVELOPMENT SYSTEM: THE CASE OF IZOBILNENSKY DISTRICT 6**
7. Behrang Manouchehrabadi, Lusine Aramyan, Coen van Wagenberg – **POLICY MAKING FOR REGRET AVERSE AGENTS 7**
8. Biljana Grujić Vučkovski, Zoran Simonović, Irina Marina – **COMMERCIAL BANKS AS SUPPORT FOR RURAL DEVELOPMENT OF SERBIA. 8**
9. Biljana Panin, Ani Mbrica – **ENVIRONMENTAL CONDITIONS OF RURAL AREAS OF SERBIA AND PERSPECTIVES FOR RURAL DEVELOPMENT 9**
10. Bojana Bekić Šarić, Vesna Paraušić, Slađan Rašić – **HARVESTING AND PROCESSING OF PROPOLIS 10**

11. Boris Kuzman, Nedeljko Prdić, Sara Kostić, Anton Puškarić –
**APPLICATION OF INNOVATIONS IN AGRICULTURE AND
DIGITISATION OF SALES AS A BASIS FOR THE FUTURE . 11**
12. Daniela Valkova – **TESTING RESULTS OF NEW IMI
SUNFLOWER HYBRIDS IN DAI-GENERAL TOSHEVO 12**
13. Dubravka Užar, Radovan Pejanović – **BRANDING OF
AUTOCHTHONOUS CHEESES THROUGH GEOGRAPHICAL
INDICATIONS IN THE REPUBLIC OF SERBIA. 13**
14. Georgi Georgiev, Nina Nenova, Daniela Valkova, **STUDY ON YIELD
AND OIL OF F₁ HYBRID COMBINATIONS OF OILSEED
SUNFLOWER UNDER THE CONDITIONS OF SOUTH
DOBRUDZHA 14**
15. Georgiana Raluca Ladaru, Ionut Laurentiu Petre, Daniela Popa,
Anton Theodor Dimitriu – **DETERMINANTS OF FARMERS’
ASSOCIATION IN ROMANIA 15**
16. Goranka Knežević, Vladan Pavlović – **EFFECTIVE TAX RATE
AND ITS EFFECTS ON AGRICULTURAL BUSINESS IN
SERBIA AFTER COVID-19 16**
17. Gordana Dozet, Vojin Đukić, Zlatica Mamlić, Gorica Cvijanović,
Nenad Đurić, Snežana Jakšić, Marija Bajagić – **ORGANIC
SOYBEAN CULTIVATION WITH A SUSTAINABLE SYSTEM 17**
18. Gordana Radović, Vladimir R. Pejanović, Dejan Zejak –
**AGRICULTURAL INSURANCE – CURRENT DEVELOPMENT
IN SERBIA AND MONTENEGRO 18**
19. Hristo Stoyanov – **BULGARIAN TRITICALE CULTIVARS AS A
PRODUCT FOR VARIED AND SUSTAINABLE FARMING . . 19**
20. Irina-Adriana Chiurciu, Ion Certan, Gina Fintineru, Aurelia-Ioana Chereji
– **THE IMPACT OF NRDP 2014-2020 ON NON-AGRICULTURAL
ACTIVITIES IN RURAL AREAS OF ROMANIA.21**
21. Irina Shakhramanian, Anna Ivolga – **RURAL TOURISM AS AN
APPROACH TO SUSTAINABLE RURAL DEVELOPMENT:
CASE OF THE STAVROPOL REGION. 22**

22.	Jasmina Mijajlović, Nikola Mihailović – COOPERATIVE AS A FUNCTION OF SUSTAINABLE RURAL DEVELOPMENT . .	23
23.	Jonel Subić, Nataša Kljajić – ECONOMIC AND FINANCIAL ASPECTS OF CABBAGE PRODUCTION ON THE FAMILY FARM	24
24.	Katica Radosavljević, Vesna Popović, Branko Mihailović – COMPETITIVENESS OF RURAL ECONOMY AND THE SUSTAINABLE DEVELOPMENT OF SERBIA	25
25.	Keranka Zhecheva, Ivan Kiryakov – COMPARATIVE TESTING OF THE RESISTANCE OF BEAN ACCESSIONS TO WHITE MOLD (<i>SCLEROTINIA SCLEROTIORUM</i>) BY A DIRECT AND INDIRECT METHOD	26
26.	Lana Nastić, Marko Jeločnik, Velibor Potrebić – INFLUENCE OF FINANCING METHOD ON EFFICIENCY OF INVESTMENTS IN BLUEBERRY PRODUCTION	28
27.	Lazar Živković – COOPERATION BETWEEN KEY INSTITUTIONS IN THE FIELD OF AGRICULTURAL AND BIOLOGICAL SCIENCES AND THEIR INFLUENCE ON KNOWLEDGE TRANSFER IN THE REPUBLIC OF SERBIA - APPLICATION OF SOCIAL NETWORK ANALYSIS	29
28.	Lela Ristić, Danijela Despotović, Petar Veselinović – IMPLEMENTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT CONCEPT IN THE EU AND SERBIA	30
29.	Ljiljana Rajnović – THE LEGAL NATURE OF AGRICULTURAL LAND DIVISION AGREEMENTS WITH REFERENCE TO THE PRINCIPLE OF REGISTRATION AND RELIANCE IN THE CADASTRE	31
30.	Maria Cristina Sterie, Eduard Alexandru Dumitru, Gabriela Dalila Stoica – SHORT SUPPLY CHAIN - BIBLIOMETRICS ANALYSIS	32

31. Maria Petrova, N. Nenova, V. Entcheva – **AGGRESSIVENESS OF *PHOMOPSIS/DIAPORTHE HELIANTHI* MUNT.-CVET ET AL. ISOLATES FROM DIFFERENT AGRO-ECOLOGICAL REGIONS IN BULGARIA 33**
32. Marija Inđin, Ivana Božić-Miljković – **PROBLEMS AND OPPORTUNITIES IN THE TRADE EXCHANGE OF AGRICULTURAL PRODUCTS BETWEEN SERBIA AND THE EUROPEAN UNION 34**
33. Marija Mosurović Ružičić, Marija Lazarević Moravčević – **INNOVATION POTENTIAL OF AGRICULTURAL ENTERPRISES IN SERBIA 35**
34. Milena Jaksić, Dragan Stojković, Milko Štimac –**ANALYSIS OF POSSIBILITIES AND RESTRICTIONS IN THE PROCESS OF RASPBERRY COMMODITY EXCHANGE DEVELOPMENT IN SERBIA. 36**
35. Milica Luković, Danijela Pantović – **PLACE OF NATURE-BASED TOURISM IN ECOSYSTEM SERVICES VALUATION IN RURAL LANDSCAPE 37**
36. Miroslav Nedeljković, Radivoj Prodanović, Adis Puška – **ANALYSIS AND FORECASTING OF FOREIGN TRADE PARAMETERS OF POTATOES IN BOSNIA AND HERZEGOVINA. 38**
37. Nada Mijajlović – **PRODUCTION OF MEDICINAL AND AROMATIC PLANTS IN SERBIA IN THE CONTEXT OF DIVERSIFICATION OF AGRICULTURAL PRODUCTION. . . 39**
38. Olivera Jovanović, Jovan Zubović – **IMPORTANCE OF THE AGRO-FOOD SYSTEM IN THE ECONOMIC DEVELOPMENT OF SELECTED LMICs 40**
39. Rade Popović, Mirjana Bojčevski, – **SERBIAN PIG FARM TRANSITION 41**
40. Radmila Jovanović, Predrag Vuković, Jean Andrei Vasile – **SMART (TOURIST) CONCEPT IN RURAL AND VITICULTURAL AREA. STUDY CASE: NEGOTIN WINEGROWING REGION 42**

41. Radovan Pejanović, Jelica Eremić-Đodić, Otilija Sedlak – THE ROLE AND IMPORTANCE OF THE AUDIT COMMISSION FOR AGRICULTURAL INSTITUTIONS ESTABLISHED BY THE STATE	43
42. Raluca Ignat, Valentin Lazăr, Daniela Zănescu, Monica Triculescu – QUALITY OF LIFE IN ROMANIA IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT	44
43. Sanjin Ivanović, Saša Todorović – THE RISKINESS OF FEED GRAIN PRODUCTION – AN EXAMPLE OF SERBIAN FAMILY FARMS	45
44. Slađana Vujičić, Marija Lukić, Milivoje Ćosić, Biljana Prodanović – YOUTH ENTREPRENEURSHIP IN AGRICULTURE	46
45. Slavica Arsić – ANALYSIS OF THE PRODUCTION AND CONSUMPTION OF BEEF IN THE REPUBLIC OF SERBIA .	47
46. Stefan Postolache, Pedro Sebastião, Vitor Viegas, José Miguel Dias Pereira, Octavian Postolache – IoT SMART SENSOR SYSTEM FOR SOIL CHARACTERISTICS MONITORING IN VINEYARD .	48
47. Steliana Rodino – STATUS AND PERSPECTIVES OF BIOECONOMY IN ROMANIA IN A CIRCULAR AND RESOURCE-EFFICIENT CONTEXT	49
48. Suzana Đorđević-Milošević – GREENING RURAL ECONOMIES IN WEST BALKAN THROUGH RURAL TOURISM DEVELOPMENT	50
49. Tamara Gajić, Drago Cvijanović – RURAL TOURISM AND WELL-BEING OF VILLAGE RESIDENTS IN SERBIA.	51
50. Tatjana Dimitrijević, Mihailo Ratknić – VALUES OF ECOSYSTEM SERVICES – OXYGEN PRODUCTION IN THE FORESTS OF BELGRADE	52
51. Vasilii Erokhin – RURAL REVITALIZATION: CHINA’S APPROACH TO SUSTAINING RURAL DEVELOPMENT	53

52.	Vera Popović, Marko Burić, Vesna Gantner, Snežana Janković, Dragan Dokić, Vladimir Filipović, Jela Ikanović, Radmila Bojović – STATE AND THE IMPORTANCE OF ORGANIC PRODUCTION TO HUMAN HEALTH	54
53.	Vesna Gantner, Danko Šinka, Vera Popović, Milivoje Ćosić, Tihana Sudarić, Ranko Gantner – THE VARIABILITY OF MICROCLIMATE PARAMETERS IN DAIRY CATTLE FARM FACILITY	55
54.	Victor Petcu, Gabriel Popescu, Ioana Claudia Todirică – ADDING VALUE TO WINTER WHEAT CROP BY ORGANIC SEED PRODUCTION – SOCIO-ECONOMIC CASE STUDY	56
55.	Vili Dragomir – IMPACTS AND ADAPTATION OF ROMANIAN AGRICULTURE SECTOR TO CLIMATE CHANGE	57
56.	Violeta Babić, Vera Rajičić, Dragan Terzić, Marija Vučić – WOMEN’S ENTREPRENEURSHIP IN THE FUNCTION OF AGRICULTURAL DEVELOPMENT	58
57.	Vladimir Miladinović, Vladan Ugrenović, Mira Milinković - THE INFLUENCE OF NATIONAL PARKS ON SUSTAINABLE RURAL DEVELOPMENT IN THE MEMBER STATES OF THE EUROPEAN UNION	59
58.	Vlado Kovačević, Raluca Andreea Ion, Marijana Jovanović Todorović – APPLICATION OF BLOCKCHAIN IN EU ORGANIC AGRICULTURE	60

PREFACE

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The Book of Abstracts addresses the wider audience by being scientifically and practically focused on all segments of sustainable agriculture and rural development.

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BOOK OF ABSTRACTS

CONDITIONS FOR ADAPTING FOOD SYSTEMS TO THE PRINCIPLES OF BIOECONOMY IN THE EUROPEAN UNION

Adam Wasilewski¹, Marek Wigier²

Abstract

The “Green Deal” and “From Farm to Fork” strategies force Poland and other European Union countries to adapt food systems to the principles of bioeconomy. The existing food systems in individual EU countries differed significantly from each other. For this reason, one of the aims of the study is to analyse the boundary conditions for the necessary changes in food systems. These conditions are shaped by the functioning structures in agriculture, agri-food processing and trade in agri-food products. In addition, a limitation in the creation of new food systems is the transfer of knowledge and new solutions in the field of bioeconomy, especially the circular economy. Presentation of examples in this regard that allow for the dissemination of this knowledge is the second objective of the study. The obtained research results, however, make it possible to determine the determinants of the correct design of EU food systems due to the differences between countries, which to a large extent determine the process of scaling innovative investments.

Key words: *food systems, bio-economy, agriculture, products.*

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THE IMPACT OF EMPOWERMENT ON MARRIED WOMEN THROUGH SELF-EMPLOYMENT IN RURAL TOURISM

Aleksandra Vujko¹, Olgica Zečević Stanojević², Leposava Zečević³

Abstract

Previous research has shown that women feel empowered if they are a part of some associations. However, it has also been shown that rural women are particularly sensitive category. There are a largest number of these women, so they represent very fascinating interest group. The aim of the paper is to show how tourism directly or indirectly influences the empowerment of married rural women, and that they thus become more independent and more equal members of community. The research is conducted on a sample of 513 rural women, and the results showed that the participants in most cases are married women with children, that the main motive for starting a business is “caring for others”, that the problem they face when starting a business is “the lack of initial capital”, and that from all tourism jobs they choose making traditional products and souvenirs, as well as engaging in rural tourism (providing food and beverage services).

Key words: *women’s empowerment, self-employment, women’s entrepreneurship, rural tourism.*

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NATIONAL RURAL DEVELOPMENT PROGRAMME 2014-2020

*Alecsandra Părnuș Rusu¹, Eliza Gheorghe², Raluca Mitulescu Avram³,
Nicoleta Marin Ilie⁴, Daniel Ifrim⁵*

Abstract

For balanced rural development, in addition to supporting agriculture, particular attention must be paid to the non-agricultural economic sector. Even if the main activity of rural residents is agriculture, the diversification of economic activity towards the non-agricultural sector provides additional incomes for entrepreneurs and stable jobs that can be achieved throughout a year, as opposed to seasonal incomes and employment opportunities in agriculture. The rural environment in Romania creates the appropriated framework for tourism development, through the natural and cultural resources that can be exploited by local entrepreneurs. Both Romanian and foreign tourists are increasingly attracted by the opportunities of visiting and spending their leisure time, which the Romanian countryside offers. The National Rural Development Programme 2014-2020 transposes in Romania the priorities of the Common Agricultural Policy and the objectives of the European Fund for Agriculture and Rural Development. Through this program, the socio-economic development of the Romanian rural area is supported, including by granting non-reimbursable financing to the rural non-agricultural sector. Tourism is one of the important sectors that need to be supported and exploited for the benefit of rural communities. The purpose of this article is to carry out an analysis of the use of the funds for agriculture and rural development made available by the EU in the period 2014-2020, in order to make investments in the establishment and development of tourist activities in the Romanian rural area. The results of the analysis reveal that non-reimbursable funding has created opportunities for the socio-economic development of local communities by increasing the number of businesses active in the tourism sector and by creating jobs, especially for women.

Key words: *rural tourism, CAP, European funds, rural development.*

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ANALYSIS OF THE PUBLIC SUPPORT FOR THE LIVESTOCK SECTOR IN THE REPUBLIC OF MOLDOVA

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Abstract

The livestock sector of the Republic of Moldova has been in a strong decline since the collapse of the Soviet Union, this trend continuing, also, nowadays. With an average share of about 30% in the total agricultural output, in the recent years, and with a sharp decline in the number of heads of animals for some sub-sectors, the livestock sector needs for significant reforms that cannot be postponed, in order to avoid its degradation. The aim of the paper is to perform an analysis of the public support of the livestock sector, for the period 2010 – 2021, with an emphasis on the most recent trends and developments. The methods used for the development of the paper are related to comparison of data for the aforementioned period, analytical method, synthesis, induction and deduction, which allowed formulation of conclusions, as the recent new policies of supporting the sector contribute to the development of some sub-sectors and are in line with the EU public support policy. The paper end with a series of sectoral recommendations.

Key words: *livestock sector, public support, subsidies, Republic of Moldova.*

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ALTERNATIVE CROPS KNOWLEDGE MANAGEMENT FROM THE STANDPOINT OF SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT¹

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Abstract

The main goal of sustainable agriculture and rural development is to increase food production and food security in a sustainable way. The increasing demand for food and feed initiated cultivation of new or less cultivated plant species, especially in regions where the staple crops cultivation is difficult. The diverse requirements of agricultural producers, processing industries and consumers, in terms of cultivation, processing and the quality of primary raw materials and products, as well as the economic and ecological benefits of growing alternative crops, impose the need for inter- and multidisciplinary research and the use of twenty-first-century tools for the transfer and application of acquired knowledge. The paper aims to illustrate how agricultural practice and grower demands drive scientific research. Through an overview of knowledge creators and providers, organizations and associations, dedicated events and publications, the work maps new research paths for more advanced applications of these crops.

Key words: *alternative crops, knowledge creators, knowledge providers, knowledge beneficiaries.*

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TOURISM IN THE SUSTAINABLE DEVELOPMENT SYSTEM: THE CASE OF IZOBILNENSKY DISTRICT

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Abstract

There are two processes are being carried out simultaneously in Russia: the process of sustainable development and the process of developing domestic tourism. Intensive development of tourism can lead to violations of the principles of sustainability. This is particularly relevant for rural areas where tourism development can be unorganized. In view of this, it is necessary to determine the role of tourism in the system of sustainable development and identify possible ways to stimulate it through the tools of the tourism industry. In this article, the experience of SSAU researchers with Izobilnensky district that is located in the Stavropol region is demonstrated. This experience involves the preparation of an exclusive tourism development program for the rural district, in line with the principles of sustainable development.

Key words: *sustainable development, sustainable rural development, tourism, sustainable tourism, domestic tourism.*

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POLICY MAKING FOR REGRET AVERSE AGENTS

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Abstract

Policy interventions require understanding the behavior of players and predicting how they respond to the interventions to prevent economic losses. Thus, when designing policy interventions, it is imperative to incorporate insights from behavioral sciences such as behavioral biases into account. In this study, we analyze a policy design problem that aims to foster the adoption of a sustainable technology by regret averse decision makers. The sustainable technology involves a potentially large loss that deters regret averse decision makers, but is more welfare-enhancing compared to the traditional technology. We show how the policy should be designed when the decision makers are regret averse. The main insight is that regret aversion might hinder the adoption of the sustainable technologies when it is welfare enhancing and so, there is room for policies that induce the decision makers to adopt sustainable technologies. We show that regret aversion increases the burden of uncertainty, i.e., the more regret averse the decision makers, the higher the cost of the policy that is required to induce them to adopt the sustainable technology. However, once opting for the sustainable technology, incentive to exert costly effort is not affected by regret aversion.

Key words: *regret aversion, sustainable technology adoption, Policy making.*

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COMMERCIAL BANKS AS SUPPORT FOR RURAL DEVELOPMENT OF SERBIA¹

Biljana Grujić Vučkovski², Zoran Simonović³, Irina Marina⁴

Abstract

The subject of the analysis is the determination of changes in the structure of bank claims from public companies and companies in agriculture, forestry, and fishing, as well as from registered agricultural producers by purpose period from 2010 to 2020. The obtained results show that the claims of banks from public companies increased by 15.6% on average per year and from business companies by 5.4%. Bank claims from registered agricultural producers recorded the highest average annual growth rate in loans for liquidity and working capital at 21.8%. The purpose of the research is to look at the involvement of commercial banks to determine whether the share of implemented agro loans in the total disbursed bank loans is changing in their credit portfolio. The paper presents the results of the banks' operations period from 2017 to 2020 and analyses: commercial bank, Banca Intesa, and ProCredit bank. The achieved results show a constant increase in the share of realized agricultural loans in the total disbursed loan funds.

Key words: *rural development, commercial banks, agricultural loans.*

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ENVIRONMENTAL CONDITIONS OF RURAL AREAS OF SERBIA AND PERSPECTIVES FOR RURAL DEVELOPMENT

Biljana Panin¹, Ani Mbrica²

Abstract

Serbia is a predominantly rural country. Rural areas cover 85% of the total territory, and the rural population accounts for 43.9 percent of the total population of the country. In accordance to definition of rural development, it is important to improve the quality of life and economic well-being of people living in these areas. To achieve these goals, environmental conditions are very important. Healthy environment is important for quality of life, provision of agricultural activity, as well as attracting people to visit rural areas, especially for rural tourism development. Despite this, rural areas in Serbia face significant environmental challenges. This paper analyses environmental conditions of rural areas in Serbia, which are important for rural development and rural tourism, in order to present state of current conditions and to give some recommendations for future activities, with the goal to provide environmental sustainability which will contribute to overall rural development.

Key words: *environment, Serbia, rural development.*

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HARVESTING AND PROCESSING OF PROPOLIS¹

Bojana Bekić Šarić², Vesna Paraušić³, Slađan Rašić⁴

Abstract

Propolis is a unique substance created by bees, which collect plant resins and process them using specific enzymes and mixing them with wax. Due to its antibacterial and antifungal properties, propolis is often used as a dietary supplement and in the treatment of certain human diseases. Propolis can be very different, both in terms of chemical composition and in color, which mostly depends on the plant species from which the resin is collected. Official statistical data on the production of propolis in the world and by country, do not exist, but experts estimate that the world's largest producers of propolis are China and Brazil, followed by Russia, the USA, Spain, Romania, Argentina and Chile. In Serbia, propolis is the third most common product of bees that is collected in apiaries, right after honey and wax, and the collected raw propolis is processed into final products, most often into alcoholic tinctures or into mixtures with other bee products, which are sold on the local market.

Key words: *propolis, production, processing, Serbia.*

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APPLICATION OF INNOVATIONS IN AGRICULTURE AND DIGITISATION OF SALES AS A BASIS FOR THE FUTURE

Boris Kuzman¹, Nedeljko Prdić², Sara Kostić³, Anton Puškarić⁴

Abstract

The aim of the research is based on the basic IT knowledge of agricultural producers and the assumptions of the application of information technology in agriculture. The main goal of the work is to determine the attitudes of young people in the South Bačka district as they see their career in the future. Based on a literature review, a survey was conducted using a questionnaire. The research was conducted in three thematic units, the attitude of young people towards agriculture, the relationship between traditional sales at the marketplaces and the digitisation of sales, and the attitude towards agriculture as an occupation of the future. Based on the results of research on a sample of 200 respondents, we determined the perspectives of agriculture in the future from the point of view of the application of innovation and digitisation as well as the attitudes of young people as future farmers. The results provide a basis for concluding concrete guidelines for future research in the field of agriculture and youth.

Key words: *innovations in agriculture, digitization of sales, attitudes, markets, marketplaces, young people.*

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TESTING RESULTS OF NEW IMI SUNFLOWER HYBRIDS IN DAI-GENERAL TOSHEVO

Daniela Valkova¹

Abstract

The distinctions between 18 IMI-resistant sunflower experimental hybrids were studied based on the following characteristics: seed yield, seed oil content, seed oil yield, plant height, head diameter, influence of climate conditions, and a two-factor analysis of variance. Hybrids' plasticity was established by studying their reaction to the variable climatic conditions. It was determined that hybrids 74A x 140R; 86A x 180R; 92A x 430R; 128A x 434R exceeded the mean standard on the characters seed yield and seed oil content with the highest statistical authenticity $P=0,001$. The studied hybrid combinations, resistant to imazamox, were affected equally by the climate conditions in terms of seed oil content and dry matter content. The strongest was the influence of environmental conditions related to the characters seed yield and plant height.

Key words: *sunflower hybrids, dai-general, distinctions.*

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BRANDING OF AUTOCHTHONOUS CHEESES THROUGH GEOGRAPHICAL INDICATIONS IN THE REPUBLIC OF SERBIA

Dubravka Užar¹, Radovan Pejanović²

Abstract

Geographical indications are used worldwide as an instrument for brand management and diversifying products. Branding of traditional products in modern business is a significant source of added value for consumers. Considering the current saturation of the market with the existing assortment, one of the ways of diversifying cheeses is protection through geographical indications. This paper discusses the limited ways in which branding strategies involving geographical indications can be used to protect traditional cheeses in the Republic of Serbia. The main aim of the research is the analysis of the compliance of the EU legislation with the Serbian regulation, and the analysis of benefits for both producers and consumers in order to successfully position and brand autochthonous cheeses on the market. Additionally, a SWOT analysis that identifies and describes the current situation in the cheese market with protected geographical origins was conducted.

Key words: brand, autochthonous cheeses, geographical indications, SWOT analysis.

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STUDY ON YIELD AND OIL OF F₁ HYBRID COMBINATIONS OF OILSEED SUNFLOWER UNDER THE CONDITIONS OF SOUTH DOBRUDZHA

Georgi Georgiev¹, Nina Nenova², Daniela Valkova³

Abstract

In sunflower breeding, it is very important to determine the morphological parameters, which affect the seed yield and which can be used as criteria for selection (Hladni et al., 2008b). The correlation of seed yield with the morphological parameters is most easy to determine through correlation analysis (Skoric, 1974; Marinković, 1992; Hladni et al., 2006). Seed yield and oil yield are the two most important economic criteria, which determine the introduction of new varieties and hybrids in production. They are, however, strongly influenced by environmental factors and have low heritability. Therefore, the correlations between the individual parameters, which affect seed yield, should be studied well within the breeding programs. When developing new high-yielding sunflower hybrids, it is necessary to find out morphological and physiological traits that are easy to improve and which have positive correlation with the parameters seed yield and oil yield. These correlations will be used as criteria for selection of parental forms. The modern sunflower hybrids possess high adaptability to changeable environments so the yield from them is used as a criterion for their genetic adaptation. When studying the inherited differences in productivity and the reasons for the heterosis effect, seed yield is the most important complex parameter for evaluation of the studied genotypes. The genotype x environment interaction is a key moment in the realization of the genetic potential of sunflower. It is necessary to determine the stability of the yield over the period of study. A decisive prerequisite for the development of a good sunflower hybrid is the production and selection of good parental components, which give in their hybrid progeny (F₁) a combination of high productivity and very good resistance to biotic and abiotic factors (Cheres et al., 2000).

Key words: sunflower, yield, type of inheritance, heterosis.

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DETERMINANTS OF FARMERS' ASSOCIATION IN ROMANIA

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Anton Theodor Dimitriu⁴*

Abstract

The present paper studies the complex phenomenon of the association of agricultural producers, presenting the results of a survey aimed at identifying the willingness of farmers to associate. Cooperatives and other associative forms are important for empowering Romanian farmers all across the food chain, considering the fact that the size of their business is small, the agricultural area of 14 milion hectares being exploited by over 4 million farmers, resulting a medium size of the farm of 3.18 hectares. The research answers the question of what factors determine the association of agricultural producers, starting from the premise that socio-demographic and economic variables influence their decision. The objectives of the research are to identify the determinants of the association process and the extent to which they influence the association decision of farmers. The results show that type of activity and form of organization have strong influence on farmers' decision to cooperate, and that the other variables influence their decisions less.

Key words: *cooperatives, groups of producers, farmers' association.*

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EFFECTIVE TAX RATE AND ITS EFFECTS ON AGRICULTURAL BUSINESS IN SERBIA AFTER COVID 19

Goranka Knežević¹, Vladan Pavlović²

Abstract

Income taxes affect the competitiveness of agricultural companies in Serbia and tax analysis through effective tax rate (ETR) methodology offers a good insight into the usage of tax planning by those companies after the Covid 19. Although those companies have preferential tax treatment in form of tax concessions or provisions, it is expected that more companies will have ETR lower than the statutory tax rate and use tax planning after Covid19. By dividing companies into two categories – tax planners and those not using tax planning we are going to test the presumption that tax planners have higher profitability, leverage, and capital intensity in comparison with non-tax planners. Although taxation analysis depends on tax policy for the agricultural industry, we are going to largely concentrate our effort to identify differences between companies in terms of tax planning and how they get relieved of a heavy tax burden.

Key words: *effective tax rate, agricultural companies, tax planning.*

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ORGANIC SOYBEAN CULTIVATION WITH A SUSTAINABLE SYSTEM

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Nenad Đurić⁵, Snežana Jakšić⁶, Marija Bajagić⁷*

Abstract

The need for certified organic agricultural products is ever greater as in the World, so in Serbia. Triennial research was conducted with five soybean varieties and foliar treatment with aqueous extract and aminoacids aimed at establishing examined factors' influence on soybean yield and organic soybean cultivation system sustainability. A field experiment was set in four repetitions. All three examined factors have shown significant influence on soybean yield and that such a method of soybean cultivation is sustainable. However, in dry farming, soybean grain yield height is mostly influenced by weather conditions, primarily precipitation quantity and distribution, as well as temperature height during the vegetation period, hence yield height varies from year to year.

Key words: *amino acids, organic cultivation, yield, soybean, aqueous extracts.*

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AGRICULTURAL INSURANCE – CURRENT DEVELOPMENT IN SERBIA AND MONTENEGRO

Gordana Radović¹, Vladimir R. Pejanović², Dejan Zejak³

Abstract

Plant production is exposed to numerous risks from unfavorable weather conditions, especially in current period, which is characterized by more pronounced weather changes. Livestock production is exposed to risks as well, and they are primarily related to animal diseases and hazardous cases. Insurance is the most prevailing system for risk management in agricultural production. The aim of this paper is analysis of the current development of agricultural insurance in the Republic of Serbia an Republic of Montenegro. Authors analyze both supply at the market of agricultural insurance and support of the state, through regressing the premium, as significant prerequisites for development of agricultural insurance. Based on the conducted research, authors give recommendations for the purpose of development perspectives of the agricultural insurance, and thus agriculture, as significant economic activity for both countries.

Key words: *risks of agricultural production, agricultural insurance, development, Serbia, Montenegro.*

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BULGARIAN TRITICALE CULTIVARS AS A PRODUCT FOR VARIED AND SUSTAINABLE FARMING

Hristo Stoyanov¹

Abstract

The principles of sustainable agriculture require the investment of an optimal amount of resources in order to produce more efficiently, which simultaneously satisfies the needs of both producers and consumers. At the same time, such production should ensure the possibility of obtaining a similar type of production in the future as well, without changing within broad limits the quantity and quality of the production. Taking into account the climatic changes and contrasting growing conditions, such principles are difficult to achieve from a breeding point of view. This is related to improving both the absorption of nutrients from the soil and resistance to pests and pathogens, as well as the application of fewer fertilizers and pesticides. One of the crops that in this sense come closest to the principles of sustainable agriculture is triticale. The crop is practically resistant to most of the economically important diseases in cereals, has a more developed root system and needs less nitrogen fertilizers for its growing, while its productivity equals and surpasses the most productive cultivars of common winter wheat. On the other hand, triticale is characterized by the possibility of diverse use of both biomass (production of biogas, bioethanol, silage) and grain (in food and fodder). In order to evaluate the economic efficiency of the production of triticale for grain and for biomass, 11 Bulgarian cultivars for grain production within 10 harvest years (2013-2022) and 13 Bulgarian cultivars for biomass production within three economic years (2019-2021) were evaluated. Both the potential income and the production costs of the crop by cultivars in both directions were estimated. The possibility of the different cultivars to be grown according to the principles of sustainable agriculture has been determined. Bumerang, Doni 52 and Borislav are characterized by the best economic efficiency in the grain production, and in the silage biomass production - Kolorit, Doni 52 and Avitohol. Based on the assessment of productivity, stability, economic efficiency, potential income and costs per unit of production, the cultivars Kolorit, Akord, Bumerang, Doni 52 and Avitohol are characterized by the best

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potential opportunity to be grown according to the principles of sustainable agriculture. The evaluation of triticale production under contrasting growing conditions shows that although the crop is generally affected by weather conditions, cultivars such as Bumerang and Doni 52 are characterized by a high level of tolerance to abiotic stress factors, high productivity at low agro background, which makes them extremely suitable to be grown in a variety of soil and climate conditions.

Key words: *triticale, sustainability, productivity, climatic conditions, cultivars.*

THE IMPACT OF NRDP 2014-2020 ON NON-AGRICULTURAL ACTIVITIES IN RURAL AREAS OF ROMANIA

Irina-Adriana Chiurciu¹, Ion Certan², Gina Fintineru³,
Aurelia-Ioana Chereji⁴

Abstract

At the European level, increased attention is paid to rural areas, perceived as areas close to nature, where the cultural and human traditions are preserved. Romania occupies an important place in the Union due to the fact that, in 2020, 45.90% of Romania's resident population lived in rural areas. However, these areas present a series of gaps compared to the urban environment, due to labor productivity, depopulation, population aging, limited access to health and education, public utilities, infrastructure, services and investments, etc. The new common European policies proposed a set of measures and directives aimed at revitalizing rural areas and increasing their attractiveness. Among these we mention the diversification of economic activities and the improvement of the added value of agricultural and agri-food activities and agritourism by stimulating local entrepreneurship. These solutions can represent an opportunity to increase resilience in the face of a health or economic crisis.

Key words: *rural area, opportunities, NRDP 2014-2020, non-agricultural activities.*

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RURAL TOURISM AS AN APPROACH TO SUSTAINABLE RURAL DEVELOPMENT: CASE OF THE STAVROPOL REGION

Irina Shakhramanian¹, Anna Ivolga²

Abstract

Rural tourism is one of the subspecies of domestic tourism, which is currently gaining popularity among tourists and subjects of rural tourism, largely due to grant programs of state support. It should be noted that rural tourism is an effective mechanism for the socio-economic development of rural areas all over the world, and not just one of the types of tourism. In the context of the reduction of the agricultural sector of the economy, rural tourism is important from the point of view of creating opportunities to improve the financial and economic condition of rural residents, and allows to increase the level of employment, improves the quality of work and living conditions of the rural population. The results of the study and the study of the experience of other countries show that the development of this area not only allows rural residents to receive additional income, but also creates opportunities for them to receive other benefits of a socio-cultural nature. Rural tourism is a classic variant of sustainable tourism: contributes to the development of rural infrastructure, improving the quality of life in rural areas, increasing rural incomes, creating jobs, supporting and preserving traditions and culture, preserving the environment. The article describes the trends in the development of rural tourism in the world and Russia, identifies the need for interdepartmental and intersectoral cooperation for the successful development of rural tourism. Also, a cluster approach to the organization of rural tourism for the achievement of sustainable development of rural areas is proposed.

Key words: *sustainable development, rural areas, rural population, rural tourism, employment, clusters.*

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COOPERATIVE AS A FUNCTION OF SUSTAINABLE RURAL DEVELOPMENT

Jasmina Mijajlović¹, Nikola Mihailović²

Abstract

The cooperative system of organization in the world is very efficient and developed in all areas of life and work, and in the function of economic and regional development. Cooperatives in Serbia have a tradition of 128 years and a significant role in the development of agriculture and villages. As active participants in many positive processes, cooperatives were developing in different socio-economic conditions and took on the characteristics of the periods they were passing through, which directly affected their work and business. Bearing in mind the importance of agriculture and the countryside and in this sense the role of cooperatives in sustainable rural development, significant financial resources are invested in the development of the cooperative system. Looking at and analyzing natural and socio-economic factors, the goal is to point out the importance of mutual connection of cooperatives and their cooperation with scientific institutions, in order to apply the latest scientific and technical achievements in practice, with the aim of more rational use of available natural resources and human potential, and in the function sustainable rural development.

Key words: *cooperatives, agriculture, village, sustainable development, rural development.*

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ECONOMIC AND FINANCIAL ASPECTS OF CABBAGE PRODUCTION ON THE FAMILY FARM¹

Jonel Subić², Nataša Kljajić³

Abstract

The paper first presents the production and economic results of cabbage production research in the Republic of Serbia and then on the research is focused on the economic and financial aspects of production on the selected family farms. Research is based on real data from practice, collected from cabbage producers in Glogonj settlement, which belongs to Pancevo municipality in the South Banat district, AP Vojvodina, Serbia. A calculation was made for one production cycle per unit of area and per unit of yield, as well as critical values that follow the production of cabbage in the open field.

The research results showed that the total costs of cabbage production on a representative agricultural farm are relatively high and amount to €6,783.95/ha. However, with the realized income of 12,758.36 euro/ha, the annual financial result is favorable and amounts to 5,974.40 euro/ha. Cabbage yields or prices can drop by 53.2% while production still generates a positive financial result. The economic and financial results of the research are very good and show that cabbage production in this part of Serbia is extremely profitable.

Key words: *cabbage, production, economic analysis, financial result.*

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COMPETITIVENESS OF RURAL ECONOMY AND THE SUSTAINABLE DEVELOPMENT OF SERBIA¹

Katica Radosavljević², Vesna Popović³, Branko Mihailović⁴

Abstract

Sustainable rural development involves integrating and adapting economic, social, and ecological segments of rural areas. This means unified and sustainable management of natural resources in rural environments. Proactive action regarding opportunities and challenges, with the help of national policy, is the way to bring Serbian agribusiness closer to European countries with developed agriculture. Increasing the competitive and comparative advantage is the goal of modern rural development, which strives to coordinate knowledge economy, diversification, and multi-functionality. Creating a sustainable society is made possible by working on strengthening rural areas through independent initiatives of local communities. Recognizing the future of sustainable rural development by analysing the current situation, opportunities, and barriers will enable Serbia to turn comparative advantages into competitive ones.

Key words: *competitiveness, rural economy, sustainable development, sustainable management, natural resources.*

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COMPARATIVE TESTING OF THE RESISTANCE OF BEAN ACCESSIONS TO WHITE MOLD (*SCLEROTINIA SCLEROTIORUM*) BY A DIRECT AND INDIRECT METHOD

Keranka Zhecheva¹, Ivan Kiryakov²

Abstract

*White mold, caused by *Sclerotinia sclerotiorum*, is a key disease of common beans in temperate and subtropical climates. For the climatic conditions of Bulgaria, the infection occurs mainly as a result of mycelogenic development of the sclerotia, which is why the disease is observed mostly in varieties with a prostrate type of the habitus (type III). Due to the wide range of hosts of the pathogen and long-term preservation of sclerotia in the soil, agrotechnical measures have little effect in controlling the fungus. Therefore, breeding resistant varieties are the most effective measure to prevent the disease. The selection of appropriate and verified methods for testing the source and breeding materials is of primary importance for the success of breeding programs to increase resistance to the pathogen. The present study aimed to compare the response of bean accessions to *S. sclerotiorum*, by applying a direct and indirect evaluation method with a view to their parallel use in the breeding process. The studies were conducted under greenhouse conditions, and 29 bean accessions were included in them. The accessions were grown in pots (45x30x10 cm) with a soil-sand mixture. In the first trifoliolate leaf, the stem was cut at 3 cm from the node of the primary leaves (STAW test). A single-sided closed plastic straw containing an agar disc from the periphery of 3-day-old cultures of four isolates cultivated on PDA medium (five plants per isolate), was placed on the cut. The reaction of the accessions was recorded 7 days after inoculation on a 9-point scale. The cut plant parts (stem and trifoliolate leaf) were immersed in oxalic acid solution (20 mM brought to pH=4.0 with 1 N NaOH), five plants per sample. The cut plant parts immersed in sterile water adjusted to pH=4.0 with 1N HCl were used for the control. The reaction of the accessions was recorded after 19h on a 9-point scale. The data were processed with the SPSS stat. ver. 19 software. Significant*

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differences were observed in the response of the accessions concerning the isolates used. Weak positive ($r=0.058/P=0.469$ and $r=0.182/P=0.064$) or negative ($r=-0.058/P=0.558$ and $r=-0.112/P=0.256$) correlations were found between the oxalate test and the STRAW test, and the direction was related to the aggressiveness of the isolates. It was established that for accessions A195, ,GTB Scythia‘ , Izabel‘ , Rhodopeia‘ and ,Pirina‘ the results of the oxalic test are comparable to those of the STRW-test. The obtained results give us reason to recommend the application of the oxalate test in the initial generations of the breeding materials, after a preliminary comparative analysis of the parental forms by both methods.

Key words: *common bean, Sclerotinia sclerotiorum, resistance, STAW test, oxalate test.*

INFLUENCE OF FINANCING METHOD ON EFFICIENCY OF INVESTMENTS IN BLUEBERRY PRODUCTION¹

Lana Nastić², Marko Jeločnik³, Velibor Potrebić⁴

Abstract

Serbian producers have favorable natural conditions for blueberry production, while this production is recognized for its potential for achieving high economic effects. Various ways of financing blueberry production influence economic efficiency of investments needed to establish blueberry production, as well as liquidity of such investments. Investments in blueberry production are usually financed by combination of own and borrowed funds. The goal of this research is to investigate effects of financing sources on investments in blueberry production. Thus, authors discussed possible participation of borrowed funds in the financial structure of investments in blueberry production.

Key words: *blueberry, investments, financing, borrowed funds.*

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COOPERATION BETWEEN KEY INSTITUTIONS IN THE FIELD OF AGRICULTURAL AND BIOLOGICAL SCIENCES AND THEIR INFLUENCE ON KNOWLEDGE TRANSFER IN THE REPUBLIC OF SERBIA - APPLICATION OF SOCIAL NETWORK ANALYSIS

Lazar Živković¹

Abstract

The main aim of this paper is to identify the most important research institutions and to examine the level of cooperation in the field of Agricultural and Biological Sciences in the Republic of Serbia in the period 2000 - 2021. The methodology applied includes a synthesis of classic bibliometric indicators of scientific productivity and social network analysis of co-authorship in papers extracted from the bibliographic database Scopus. By applying bibliometric analysis, scientific productivity and the evolution of scientific achievements in this field were examined. On the other side, through social network analysis, a network of research institutions was identified; the degree of connectivity between the institutions in the network is shown; the importance of each institution in the network and the influence of each institution individually on the transfer of knowledge was analysed.

Key words: *bibliometric analysis, social network analysis, knowledge transfer, agricultural and biological sciences.*

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IMPLEMENTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT CONCEPT IN THE EU AND SERBIA

Lela Ristić¹, Danijela Despotović², Petar Veselinović³

Abstract

The concept of sustainable agriculture and rural development is recognized both in theory and in practice. Nonetheless, the ideal model and method of institutional support that would ensure the best possible harmonization of the economic, environmental and social components of sustainable development of agriculture and rural areas, is still being sought. Thus, the subject of research conducted in this paper is the implementation of the concept of sustainable agriculture and rural development in the European Union (EU) and the Republic of Serbia. The aim of the research is to indicate the possibilities of sustainable agricultural and rural development in modern circumstances. The research results show that the concept of sustainable agriculture and rural development has been successfully implemented in the EU over a long period of time, however, it is accompanied by a number of limitations. In terms of Serbia, numerous weaknesses and risks relating to the process of sustainable development of agriculture and rural areas have been identified, as well as significant resource potentials and development opportunities, which should be exploited more effectively and efficiently.

Key words: *sustainable development, agriculture, rural areas, European Union (EU), Republic of Serbia.*

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THE LEGAL NATURE OF AGRICULTURAL LAND DIVISION AGREEMENTS WITH REFERENCE TO THE PRINCIPLE OF REGISTRATION AND RELIANCE IN THE CADASTRE

Ljiljana Rajnović¹

Abstract

In this paper, the author analyzes the legal nature of the contract on the physical division of agricultural land, which is the basis for acquiring ownership rights to real estate created by division. The contract is concluded in the form of a notarial document, which proves the resulting legal relationship and represents the assumption of the accuracy of the data specified in the contract. The burden of proving the falsity of the data is borne by the one who disputes its veracity. The notary public has the obligation to check whether the transaction is permitted and to warn the parties of the legal consequences of the transaction.

The purpose of real estate records is to provide reliable evidence of ownership or other rights to real estate. In the practice of Serbia, it has been shown that there are errors in the cadastre records, which is contrary to the general principles of cadastre management, but leads to errors in the contract.

In the case of a dispute for the annulment of the document, the contractors would have to prove separately that the facts were untruthfully stated in the document or that it was drawn up improperly. To achieve the purpose of the principle of reliability of registration in the cadastre, the creators of the regulations, as well as those who apply them, are responsible.

Key words: *physical division, contract, constitutivity, principle of reliability of registration in the cadastre, errors in the cadastre.*

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SHORT SUPPLY CHAIN - BIBLIOMETRICS ANALYSIS

Sterie Maria Cristina¹, Eduard Alexandru Dumitru², Gabriela Dalila Stoica³

Abstract

Short supply chains are considered as an alternative of food distribution with an economic, social and environmental importance. By means of bibliometric analysis, guidelines for the main topics interlinked with the “short supply chain” and research directions were drawn. Research results were analyzed through visual mapping and researchers’ concerns for the value chain, food industry, rural development, risks, productivity, and biodiversity were identified. According to the years, terms related to the researched topic show that in 2010-2013 the main topics were food, in 2014-2016 the main topics were consumers and food impacts, and later the focus was on circular economy, covid-19 and agriculture.

Key words: *short chain, bibliometric analysis, European Union.*

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AGGRESSIVENESS OF *PHOMOPSIS/DIAPORTHE HELIANTHI* MUNT.-CVET ET AL. ISOLATES FROM DIFFERENT AGRO-ECOLOGICAL REGIONS IN BULGARIA

Maria Petrova¹, Nina Nenova², Valentina Entcheva³

Abstract

Phomopsis or grey spots on sunflower with teleomorph *Diaporthe helianthi* and anamorph *Phomopsis helianthi* is one of the economically important diseases worldwide. The losses caused by this pathogen can reach up to 40% of the productivity, and 15-20 % of oil content. The use of resistant hybrids is considered the most efficient method for control of the disease. The established aggressive variation in the pathogen's population considerably hinders the breeding process. Therefore, the aim of this investigation was to determine the aggressiveness of isolates from *Diaporthe helianthi* with a view of their further use as markers in the breeding for resistance to the fungus. The investigation involved 30 isolates of the fungus from four agro-ecological regions of Bulgaria. The aggressiveness of the isolates was determined under field conditions through artificial inoculation of hybrid *Deveda* and cultivar *Favorit* by the straw method. The inoculation was done at the beginning of flowering stage, and the results were read in 14 days according to a 9-degree scale. Based on the ranking, the area under the development of plant curve (AUDPC) was calculated for each genotype, as well as the average area under the development of plant curve (AAUDPC) for the two genotypes. High and significant effect of the genotype, the isolate and their interaction was established ($P < 0.0001$). High aggressiveness to hybrid *Deveda* was demonstrated by six of the investigated isolates. Nine of the studied isolates showed high aggressiveness to cultivar *Favorit*. Isolate 29 (Ph21.2.1/1) was characterized by the highest aggressiveness to the studied genotypes (AAUDPC=52.0), followed by isolate 6 (Ph21.6.1/4), the differences in their values not being significant. Variation in the aggressiveness of the isolates was observed in each of the production regions, the isolates with origin from Karnobat having aggressiveness below the average for all investigated isolates.

Key words: *phomopsis, isolates, aggressiveness, sunflower, Diaporthe.*

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PROBLEMS AND OPPORTUNITIES IN THE TRADE EXCHANGE OF AGRICULTURAL PRODUCTS BETWEEN SERBIA AND THE EUROPEAN UNION

Marija Indin¹, Ivana Božić-Miljković²

Abstract

During the process of joining the European Union, Serbia is faced with a number of requirements that it needs to fulfill. One of them refers to the process of trade exchange of agricultural products, further discussed in the paper. This primarily refers to the adjustment of the assortment of agricultural products, the method of production and processing, packaging, as well as the fastest form of transport to the end consumers. One of the ways in which Serbia could increase its competitiveness is various forms of promotion of the products themselves, as well as tying end consumers to a brand that signifies the quality and freshness of the product, which has a mark of origin, which will be discussed more in the paper itself. The authors will give their opinion and suggestions for improving the competitiveness of Serbia and increasing the chances for greater export of agricultural products. The importance of trade exchange is great and has positive tendencies.

Key words: *trade exchange, agricultural products, competitiveness, consumers, quality, Serbia.*

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INNOVATION POTENTIAL OF AGRICULTURAL ENTERPRISES IN SERBIA

Marija Mosurović Ružičić¹, Marija Lazarević Moravčević²

Abstract

Influences from the environment, predominantly determined by crisis situations, caused by the COVID 19 pandemic and war events, have brought changes in the structure of all industrial branches, especially stressing the pressure on agriculture and agricultural producers around the world. Also, the growing need for agricultural and food products imposes the need for accelerated development of this sector, which cannot be achieved without the introduction of innovative technologies and solutions.

Indicators of innovation activities for the period from 2018 to 2020 for Serbia indicate that innovations in this sector are at the lowest level, which is the focus of the research of this paper. Relying on the methodology of EUROSTAT and OECD, the authors analyze the innovation potential of companies operating in the agricultural sector. The aim of the paper is to point out the importance of innovations in overcoming the problems faced by the agricultural sector in Serbia, as well as to highlight their impact on the growth of productivity and competitiveness of this sector.

In accordance with the obtained findings, recommendations for decision makers will be made and possible directions for further research will be recommended.

Key words: *innovations, agricultural sector, innovation potentials, competitive advantage.*

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ANALYSIS OF POSSIBILITIES AND RESTRICTIONS IN THE PROCESS OF RASPBERRY COMMODITY EXCHANGE DEVELOPMENT IN SERBIA

Milena Jakšić¹, Dragan Stojković², Milko Štimac³

Abstract

Abstract. This paper analyses possibilities and potential restrictions of forming raspberry commodity exchange in Serbia, that is, raspberry is analyzed as potential exchange commodity. According to this, apart from the overall raspberry production in Serbia, the focus is particularly on the quality of raspberry standardization process. The empirical part of this research points out the research based on questionnaires distributed in the municipalities of Ivanjica and Arilje in order to examine manufacturers' willingness to accept this alternative mode of raspberry selling and distributing. According to the analysis conducted in this research, the possibility of raspberry to be included in the commodity exchange process in Serbia is confirmed, only if numerous current and potential restrictions are removed.

Key words: *commodity exchange, raspberry, quality standardization.*

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PLACE OF NATURE-BASED TOURISM IN ECOSYSTEM SERVICES VALUATION IN RURAL LANDSCAPE

Milica Luković¹, Danijela Pantović²

Abstract

Ecosystem services (ES) are the subjects of number of studies in recent ten years. There were many attempts to value ecosystem services from ecological, social and economic aspects. The fact is there are limited number of studies focused on the place of tourism as a part of cultural ecosystem services in the frame of rural surrounding. The research include perception of different interest groups (local inhabitants, stakeholders and students) on ES in selected rural areas. The aim of this paper is to identify the most important ES using priority ranking analysis and range of variance between researched groups. The results show that in local inhabitants perception provisioning ES are still major driving force of rural economy. Cultural ES is finding its place in perception of stakeholders and students. In the range of cultural ES categories, nature-based tourism were recognized as one of important factors of development. The conclusion of the paper indicates the necessity of including cultural ES in the analysis and assesses, the need to map places of exceptional cultural value. In addition, the need to use the ES framework for identifying the economic benefits of cultural and natural resources is emphasized.

Key words: *ecosystem services, rural landscape, nature-based tourism.*

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ANALYSIS AND FORECASTING OF FOREIGN TRADE PARAMETERS OF POTATOES IN BOSNIA AND HERZEGOVINA

Miroslav Nedeljković¹, Radivoj Prodanović², Adis Puška³

Abstract

Considering the foreign trade importance of potatoes in Bosnia and Herzegovina, the aim of the study was to use a quantitative research method to analyze the movement of the foreign trade parameters of this vegetable, as well as to determine any changes that occurred in the observed ten-year period, and to predict their movement in future period. The results show that in the period from 2012 to 2021, Bosnia and Herzegovina had a negative foreign trade balance of 16,150 tons, which makes it an importer of this vegetable. Imports and exports were relatively unstable in the analyzed period, which means that exports in quantitative terms show a slight tendency to fall in the future period. In the structure of potato imports in Bosnia and Herzegovina, the Netherlands has the largest share, while Croatia is the most represented export destination. The obtained results can be used for future research on the influence of certain factors on the analyzed foreign trade parameters of potatoes in Bosnia and Herzegovina.

Key words: *potatoes, forecasting, import, export, Bosnia and Herzegovina.*

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PRODUCTION OF MEDICINAL AND AROMATIC PLANTS IN SERBIA IN THE CONTEXT OF DIVERSIFICATION OF AGRICULTURAL PRODUCTION¹

*Nada Mijajlovic*²

Abstract

The development chance of sustainable agricultural production in Serbia lies in expanding the production of medicinal and aromatic herbs. Serbia's advantage in the production of medicinal plants is also reflected in the favorable geoclimatic situation and plant biodiversity at its disposal. The collection and cultivation of medicinal plants in the context of sustainable agriculture has its own important place. Individual cultivated medicinal plants can, on a relatively small area, very quickly, with an organized and safe market placement, provide a return on invested funds with a solid profit. In the plans at the level of Serbia as a country, funds are foreseen for the expansion of this production in the context of diversifying the income of agricultural producers. In addition to production, more and more manufacturers decide to process medicinal raw materials and, in this connection, preparations are placed on the market, both domestically and internationally. The aim of this paper is to review the purchasing and production possibilities and capacities of the Republic of Serbia in terms of medicinal plants. The range of medicinal and aromatic herbs and purchase prices on the domestic and foreign markets will be considered.

Key words: *medicinal and aromatic plants, diversification of agricultural production, sustainable development.*

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IMPORTANCE OF THE AGRO-FOOD SYSTEM IN THE ECONOMIC DEVELOPMENT OF SELECTED LMICs

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Abstract

Primary agricultural production and the food industry together represent the agro-food system. This system plays an important role in the economic development of the Republic of Serbia. According to the World Bank classification, Serbia belongs to the group of LMICs. The aim of the analysis in this paper is to confirm the strategic role of the agro-food system in the economic structure of low- and middle-income countries and its contribution to overall economic development. Applied criteria for selecting the countries for the analysis were: gross national income per capita, territorial affiliation (geographical position), and CEFTA agreement. Based on the mentioned criteria, the sample consists of Serbia, Albania, Bosnia & Herzegovina, and North Macedonia. Indicators of the contribution were created using secondary data and divided into four categories: employment indicators, activity indicators, population indicators, and economic indicators. The period covered by this analysis is from 2013 to 2018.

Key words: *agro-food system, LMICs, economic development, qualitative indicators, Serbia.*

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SERBIAN PIG FARM TRANSITION

Rade Popović¹ Mirjana Bojčevski²

Abstract

The analysis examines the structural changes in Serbian pig industry from 2012 to 2018. In first stage we explore trends in pig farm changes based on Agriculture Census 2012 and Farm structure survey 2018. Three pig production systems were analysed: specialised sow, specialised pig finishing and mixed system. Results reveal several trends: number of farms diminishing, all decrease of farms and pigs coming from farms with less than 50 pig capacity, average capacity of farms remaining in business increasing, two third of production is concentrated in 9 out of 25 regions, and pig finishing business is moving from Serbia South to North region. Second, stage analysis is focused on economic stability of pig farms, based on FADN Serbia data. Farms with mixed pig production system show more stability in economic results, and specialised farms with bigger capacity perform better than middle and small farms. Economics of small farms is still important to understand, because half of pig production in Serbia coming from farms with up to 50 pigs.

Kay words: *pig farm, production system, profitability, Serbia.*

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SMART (TOURIST) CONCEPT IN RURAL AND VITICULTURAL AREA. STUDY CASE: NEGOTIN WINEGROWING REGION

Radmila Jovanović¹, Predrag Vuković², Jean Andrei Vasile³

Abstract

The wine growing region of Negotin, as well as the rest of Serbia's wine growing areas, is mostly linked to rural areas. Also, in developed countries, wine tourism stands out as a product of rural tourism. Although most wineries are still in the initial phase of using innovative and smart technologies, most wineries in Serbia invest great efforts and increase the attractiveness of wine tourism through the provision of smart tourist services.

In the article, an assessment of the area and settlements of the wine growing region of Negotin was carried out, where there would be the greatest potential for development into smart destinations: smart villages and smart wine-growing destinations. In the analysis and evaluation, the concept of smart tourist destinations was defined as 6A (attractions, accessibility, contents, available packages, activities, auxiliary services) with the use of Geographic Information System (GIS) and Analytical Hierarchy Process (AHP). The results show that the wine growing region of Negotin has potential for the development of wine growing districts as smart tourist destinations - the city of Kladovo. The other areas of this wine growing region present an extremely poor zone of potential with a total frequency of 84.01%.

By investing, educating and investing additional efforts of the local community and the state, the other areas of the Negotinska Krajina wine-growing region would have great opportunities for development, especially due to the long history and tradition of the development of wine and viticulture in this area.

Key words: *smart villages, (smart wine) destinations, wine growing region, smart concepts 6A, information technologies.*

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THE ROLE AND IMPORTANCE OF THE AUDIT COMMISSION FOR AGRICULTURAL INSTITUTIONS ESTABLISHED BY THE STATE

Radovan Pejanović¹, Jelica Eremić-Đođić², Otilija Sedlak³

Abstract

The research topic relevance is in the importance of the Audit Commission's support to state institutions in the field of agriculture. The support of the Audit Commission to the agricultural sector is a comprehensive support system, and it also refers to the organization the rational use of state funds, and appropriate control of compliance with the target use. It is support aimed at the integrated development of agriculture. The basic goal of this type of audit is also the central goal of the paper, which is to define the control framework for risk management, with their timely recognition. In this way, compliance of existing agricultural policies and legislation with the process of reducing risks and costs is ensured. The paper also gives one of the possible definitions of the concept of audit of budget funds by the Audit Commission. It is a system of measures for checking legality, expediency and effectiveness for the distribution and use of financial resources available to the agricultural institution. The audit committee evaluates the financial statements. The authors introduced and implemented a decision-making system with an internal audit procedure. The model was built with a certain number of internal controls. This model can simulate the sustainable functioning of agricultural institutions with reduced risk in business management. In this way, the property of state agricultural institutions is protected and their further development is enabled.

Key words: *Audit Commission, sustainable functioning, agricultural institutions.*

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QUALITY OF LIFE IN ROMANIA IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

Raluca Ignat¹, Valentin Lazăr², Daniela Zănescu³, Monica Triculescu⁴

Abstract

Quality of life is a concept of modern society. Societal evolution requires the permanent change of methods and tools for analyzing living conditions, living standards and living demands of each individual, but also of groups, in general. Regardless of the need for development of the group or collectivity, it is the individual's claim to life that determines progress. Why? Because the common, ordinary individual is the one who does extraordinary things because he wants his own good, first and foremost. The main purpose of this paper is to provide an insight of the quality of life in Romania in the context of sustainable development. Based on the current situation of the main components of quality of life, the paper aims at drawing the best solutions for improving quality of life based on the three pillars: economic, social and environment. The paper has an added value offered by its very pragmatic approach that is quite suitable for public policy decisions. Conclusion is that solution-based education is the most appropriate in order to reach some of the pillars' objectives both with solution-based investments for others.

Key words: *quality of life, sustainable development, modern society.*

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THE RISKINESS OF FEED GRAIN PRODUCTION – AN EXAMPLE OF SERBIAN FAMILY FARMS¹

Sanjin Ivanović², Saša Todorović³

Abstract

Feed grain production is exposed to many risks, which, in general, can be referred to as internal and external risks. As a result, significant variation in the profitability of different feed grain could appear due to risk exposure. The riskiness of feed grain production is transferred to livestock breeding (because of the high participation of feed costs in total costs of livestock production) influencing in such a way its economic efficiency. Therefore, the goal of this research is to analyze the profitability of feed grain production in the risky environment. The analysis was based on data originating from Serbian family farms dealing with feed grain production. The results indicate the way farmers make their business decisions in risky circumstances, providing better insight and understanding of farmers' behavior.

Key words: *risk, costs, production value, feed grains, livestock production.*

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YOUTH ENTREPRENEURSHIP IN AGRICULTURE

Sladana Vujičić¹, Marija Lukić², Milivoje Ćosić³, Biljana Prodanović⁴

Abstract

Today, the main capital of societies is knowledge, skills and human resources. Also, entrepreneurship is recognized as one of the key drivers of the economic development of every country. The development of entrepreneurship in the agricultural sector represents one of the opportunities for strengthening agricultural enterprises, increasing the export of agricultural products, but also reducing unemployment, especially among young people. Young people today represent the driving force of society and their involvement in entrepreneurship, especially in the agricultural sector, would help them get a job and become financially independent.

The aim of the work is to examine the possibilities for the development of youth entrepreneurship in the agricultural sector and to point out the obstacles that threaten that development.

Key words: *youth, entrepreneurship, agriculture, unemployment.*

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ANALYSIS OF THE PRODUCTION AND CONSUMPTION OF BEEF IN THE REPUBLIC OF SERBIA¹

Slavica Arsić²

Abstract

The meat consumption is an indicator of the population life standard. The increase in life standard results in the increase of consumption and increased demands for the improved meat quality. The share of animal proteins ranges up to 50% in regard to the total quantity in highly developed countries, while it is considerably less, around 15-20%, in underdeveloped countries. Beef and veal are considered as the best quality meat with the best nutritional characteristics, and therefore a price of this kind of meat is mostly higher than the other meats' prices.

In this paper was analysed the production and consumption of beef and veal for the time period from 2012 to 2021 in the Republic of Serbia. Results and analysis according to the base and chain indices for the observed time period have shown certain cyclicity in consumption and no indications for stabilization and increase in the beef consumption in the Republic of Serbia.

Key words: *Beef, analysis, production, consumption.*

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IoT SMART SENSOR SYSTEM FOR SOIL CHARACTERISTICS MONITORING IN VINEYARD

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José Miguel Dias Pereira Octavian Postolache⁴*

Abstract

The optimization in agricultural operation is an important issue associated with production and sustainability. In this work the conditions of air and soil associated with vineyards are investigated using IoT smart sensor system that provides capabilities for continuous monitoring. Thus for soil characteristics are presented a set sensing nodes with accurate measurement of moisture, pH, electrical conductivity, temperature and macronutrients concentration. The relation between some of soil and air condition is also highlighted through the air temperature and air relative humidity measurements. The interdependencies of different measurements that affect the accuracy of estimation for macronutrients concentration is discussed. Validation results of the system for the particular case of vineyard soil are included in the paper.

Key words: *smart sensor system, soil, monitoring.*

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STATUS AND PERSPECTIVES OF BIOECONOMY IN ROMANIA IN A CIRCULAR AND RESOURCE-EFFICIENT CONTEXT

*Steliana Rodino*¹

Abstract

Strategic approaches for the bioeconomy exist worldwide, starting with 2012 in the EU and the United States and soon after that, in many European countries. This concept has started to gain ground in the regional development agenda in most countries. Bioeconomy strategies have been rapidly developed in various countries, including highly industrialized countries, economies in transition and developing countries. Nowadays, it is well recognized that bioeconomy implies a transdisciplinary approach, oriented rather towards a patrimonial approach and then towards economic gain, insisting at the same time on the limited assimilation capacity of ecosystems, as well as highlighting the constraints of substitution between different types of capital.

This study is presenting the status and perspectives of bioeconomy in Romania in transition to a green economy in the context of circular and resource efficient development models. The first step towards a Romanian strategy for the bioeconomy was achieved by including the bioeconomy in various national sectoral or regional strategies. For the design of a national bioeconomy strategy, by considering these various approaches, overlaps and synergies between existing orientations and the bioeconomy strategy to be developed can be.

Key words: *sustainable development, green transition, strategic orientation, bioeconomy.*

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GREENING RURAL ECONOMIES IN WEST BALKAN THROUGH RURAL TOURISM DEVELOPMENT

Suzana Đorđević-Milošević¹

Abstract

West Balkans (WB) agrees that its rural areas offer opportunities for sustainable development if their rural economy is diversified. The assessment was conducted to consider its human resources natural and capital factors as a potential for this diversification. The high potential was identified within rural tourism. Hospitality, transport, and complementary services in rural destinations are, however, modest. The urgency of providing support, nor the need for its multisectoral nature, is not yet fully recognized. Pandemics have discovered even more shortages indicating that WB is missing the momentum for booming rural tourism development. Long-term and consistent support policies are not in place, while wide action toward strengthening, shortening, and greening rural tourism value chains are lacking. Rising public awareness is a necessary step toward reaching sustainability, or local attractors might be lost. Improving regional cross-border cooperation seems to be the key approach for speeding up this transformation.

Key words: *rural tourism, economy diversification, development policies, West Balkans, pandemics, strengthening value chains.*

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RURAL TOURISM AND WELL-BEING OF VILLAGE RESIDENTS IN SERBIA

Tamara Gajić¹, Drago Cvijanović²

Abstract

Every form of tourism contributes to the social and economic development of the destination. The current study aimed to assess the impact of the development of rural tourism on the perception of the villagers about its positive impact on a better quality of life (S&S- Satisfaction and Support). The findings revealed that the quality of rural services is at a satisfactory level, creating satisfaction among local residents who believe that they should support and invest in the development of this type of tourist product. The importance of the research can be reflected in the awareness of the local population about the future development and the importance of rural tourism in terms of its implications on the quality of life in the countryside, but also as a basis for further theoretical and professional research on the given issue.

Key words: *village, quality, local development, Serbia, tourism.*

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VALUES OF ECOSYSTEM SERVICES – OXYGEN PRODUCTION IN THE FORESTS OF BELGRADE

Tatjana Dimitrijević¹, Mihailo Ratknić²

Abstract

Forests produce oxygen necessary for human existence and bind CO₂, and thus contributes to the reduction of global warming. It is the forest biomass that is the main parameter in evaluating the amount of oxygen produced and carbon bound. More oxygen (in percentage terms) has been used in the last 50 years than in the entire Anthropocene Period. By the end of the 21st century, the lack of oxygen may become one of the most serious threats to life on Earth. With an annual consumption of only 10 billion tons of oxygen, the human race would be in danger in 100,000 years, which would be accompanied by high concentrations of carbon dioxide. With an increase in oxygen consumption by 1.1%, the same threat would arise in 700 years. This upward trend has already been reached. To assess the value of oxygen production, we used the value of human life. Different methods have been used to determine the price of human life (use of resources, statistical methods, methods of determining human capital, questionnaires, etc.). The value of human life in Great Britain is estimated at 3.1 million EUR, Latvia at 320,000 EUR, Luxembourg at 5.0 million dollars, Sweden at 2.6 million EUR, and Portugal at 2.3 million EUR. The value of human life is determined based on age, gender, education, qualifications, and social status. Based on available statistical data and the given methodologies, we estimated that human life in Serbia is worth EUR 368,000 (based on data for the second quarter of 2021). The total value of oxygen produced in the forests of Belgrade amounts to EUR 703,223 million and provides life for 1,910,954 inhabitants. According to the data of the Statistical Institute of Serbia for 2019, Belgrade had a population of 1,694,056, which means that the existing forest ecosystems meet the current needs of the population. However, when other “consumers” of oxygen (cars, industry, etc.) are included, it is evident that Belgrade has a shortage of oxygen produced in its forests.

Key words: ecosystem services, forest, oxygen production, value of human life.

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RURAL REVITALIZATION: CHINA'S APPROACH TO SUSTAINING RURAL DEVELOPMENT

Vasilii Erokhin¹

Abstract

The rural revitalization policy is one of the critical components of systematic economic and administrative reforms that have been carried in China in recent years. It aims at putting forward the prosperous industry, livable ecological villages, civilized governance, and an influential and affluent life for residents with a commitment to consolidating and enhancing the achievements of new rural construction. A specific feature of China's approach to sustaining rural development is the considerable involvement of the state and public organizations in the regulation of various aspects of rural life. Although not directly and entirely applicable to many market economies, China's impressive experience in achieving sustainable development goals in the sphere of rural development and lifting millions of rural people out of poverty definitely deserves a vigorous study. This paper attempts to track the evolution of academic and practical approaches to dealing with the sustainable rural development agenda in China through decades, summarize the key parameters of China's current vision of sustainable rural development, and identify China's peculiar sustainable development measures that can be potentially adopted in EU countries, with a particular focus on Serbia.

Key words: *rural revitalization, sustaining rural development.*

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STATE AND THE IMPORTANCE OF ORGANIC PRODUCTION TO HUMAN HEALTH

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Dragan Dokić⁵, Vladimir Filipović⁶, Jela Ikanović⁷, Radmila Bojović⁸*

Abstract

Sustainable resource management and environmental protection are the basis for ensuring long-term stability and quality of agricultural production on the global food market where organic production has a great chance. In this study, organic crop production in Serbia is analysed in comparison with neighbouring countries, and the prospects for the development of organic crop production in our country are indicated by SWOT analysis. Trend of growth in value of organic production is recorded a continuous upward path, due to the increased awareness of people about the importance of consuming health-safe foods, produced in a certified system of organic agriculture. Organically produced plant derived food products have a higher nutritional value than conventional ones and lower level of contamination in organic crops, which is why the risk of diseases caused by contaminated food is significantly reduced. Main benefits organic productions are health-safe products, economic profit/benefit, preserving the environment and health.

Key words: *organic plant production, health-safe products, SWOT analysis.*

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THE VARIABILITY OF MICROCLIMATE PARAMETERS IN DAIRY CATTLE FARM FACILITY

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*Tihana Sudarić*⁵, *Ranko Gantner*⁶

Abstract

Since the change in climate is unquestionable if we plan to have sustainable milk production we need to implement a long-term mitigation method. A precondition for the genetic evaluation and selection of genetically heat-resistant animals is the measurement and analysis of the variability of microclimate parameters. Therefore, this research aimed to show the variability of microclimate parameters in a selected dairy cattle farm. The records of ambient temperature and relative humidity in the selected farm were measured using a Datalogger. The conducted research and data analysis indicate noticeable variability of observed microclimate parameters (ambient temperature, relative humidity and temperature-humidity index) in regard to the measurement days. Determined daily THI values indicate a high probability of the occurrence of heat stress in the observed period. Furthermore, daily monitoring of microclimate parameters enables timely reaction and prevention of more serious consequences of heat stress on dairy cows.

Key words: *dairy cattle, microclimate, heat stress.*

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ADDING VALUE TO WINTER WHEAT CROP BY ORGANIC SEED PRODUCTION – SOCIO-ECONOMIC CASE STUDY

Victor Petcu¹, Gabriel Popescu², Ioana Claudia Todirică³

Abstract

Chemical fertilizers costs intensified worldwide from 2019 to 2022 due to the gas price crisis. Also the climate change affects crops susceptibility and response to applied synthetic inputs in conventional agriculture. Farmers are returning to agroecological measures and shifting to organic agriculture. In both agricultural systems seed producing is adding value to the final product. This study case aims to analyze and highlight the production cost and income on winter wheat (Glosa variety – used by over 60% of Romanian farmers), for certified seed in organic agriculture system. The used data are from applied technology in experimental and seed production fields of National Agricultural Research and Development Institute Fundulea, Calarasi county, Romania. The production costs are influenced by manual operations and fuel price. Seed production in organic agriculture, even if generated an income of 339.38 €/ha in 2019 and 309.02 €/ha in 2022, is not economical viable without organic farming subsidies.

Key words: *organic, seed production, wheat, Romania, costs, income.*

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IMPACTS AND ADAPTATION OF ROMANIAN AGRICULTURE SECTOR TO CLIMATE CHANGE

Vili Dragomir¹

Abstract

Climate change affects agriculture on multiple levels, including changes in average temperatures, extreme precipitation and high temperatures, changes in the variety of pests and diseases, modifications of atmospheric carbon dioxide and methane concentrations, ground-level ozone concentrations. All of these trigger variations in the quantity and quality of crop production, bringing along alterations of nutritional quality of food and threatening food security.

While agriculture is both affected and affecting the climate change variations and needs to reconsider several adaptation measures, it is in the same time an important factor in mitigation of the foreseen effects and plays a key role in climate neutrality action plans.

This study is presenting the Romanian crop production system in the climate change, taking into consideration the needs of the future development and the opportunities of the present assets.

Key words: *crop production, climate neutrality, sustainable development, bioeconomy.*

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WOMEN'S ENTREPRENEURSHIP IN THE FUNCTION OF AGRICULTURAL DEVELOPMENT

Violeta Babić¹, Vera Rajičić², Dragan Terzić³, Marija Vučić⁴

Abstract

The development of female entrepreneurship is one of the prerequisites for accelerated economic development in any economy. Due to the multiple roles of women in agricultural production, female entrepreneurship in this activity is particularly significant. European agriculture and Serbian agriculture, in terms of female entrepreneurship, have similar characteristics. A small number of women are property owners and farmers, in Serbia - 19.5%, in the EU - 17%. In Serbia, women are mostly owners and managers of small family farms, and with the increase in the area of used agricultural land, their participation decreases. In the EU, it is the opposite, as almost 40% of women manage large farms (over 100 ha). The age structure of women in agriculture is very unfavorable. Less than 10% of female managers are under the age of 35, and almost ¼ of women in the EU are over 65. while in Serbia, the average age of female owners of agricultural holdings is 65 years. This indicates the necessity of measures to support and empower women's entrepreneurship in agriculture, and the benefits would be multiple.

Key words: *female entrepreneurship, agriculture, women managers.*

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THE INFLUENCE OF NATIONAL PARKS ON SUSTAINABLE RURAL DEVELOPMENT IN THE MEMBER STATES OF THE EUROPEAN UNION

Vladimir Miladinović¹, Vladan Ugrenović², Mira Milinković³

Abstract

National parks, natural areas unspoiled by human exploitation in order to preserve flora, fauna and geomorphological habitats, in addition to preserving biodiversity and scientific development, offer the possibility of tourism development, recreation and use resources from nature for the purpose of sustainable rural development of the local community. Rich biodiversity and ecosystem services contribute to the development of tourism in national parks. This overview paper presents multinational parks in four EU countries: France (Cévennes), Norway (Breheimen; Reinheimen), Hungary (Orseg), Spain (Galicia) and their impact on the sustainable development of rural areas in their immediate vicinity. There are opportunities for the development of rural tourism, catering, production and sale of food. With the increase in the number of tourists, there is a need to build infrastructure, roads and accommodation facilities in rural areas, and there is also an opportunity to educate staff from the rural community for jobs in tourism. In addition to the economic importance, it is of exceptional cultural and spiritual importance because by presenting ethno-heritage to visitors, preserves the tradition and culture of the given area. All the mentioned factors provide the possibility of employment, the cessation of migration of the population from rural areas and economic growth.

Key words: *national parks, sustainable development, rural tourism.*

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APPLICATION OF BLOCKCHAIN IN EU ORGANIC AGRICULTURE

Vlado Kovačević¹, Raluca Andreea Ion², Marijana Jovanović Todorović³

Abstract

In recent years Blockchain emerges as a promising technology for agriculture. Blockchain is applied in cryptocurrencies, but in recent years it has also been successfully implemented in the food supply chain. This paper aims to facilitate an understanding of the application of blockchain in organic agriculture. Within the EU where data records in the organic supply chain are in a paper form inaccessible to consumers, there are no uniform data records, etc. These structural shortcomings were the motive for analyzing blockchain as a solution to remove barriers in the supply chain. We rely on intensive literature research, consultations with organic farmers, retail chain representatives, organic products processors, organic certification bodies and experts in the field of production and marketing of organic foodstuff. The results show positive effects of applying blockchain to the organic food supply chain, such as strengthening organic production control systems, increasing consumer trust and reducing administrative and transaction costs.

Key words: *blockchain, digital agriculture, Organic agriculture.*

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