

12th International Conference
of the
Association of Agricultural Economists of the Republic
of **Macedonia**



BOOK OF ABSTRACTS

Changes & Challenges in South East European Agricultural Economics





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of the
**Association of Agricultural Economists of the Republic
of Macedonia**

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Agricultural Economics"*

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BOOK OF ABSTRACTS

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The Association of Agricultural Economists of the Republic of Macedonia – AAEM (Здружение на агроекономистите на Република Македонија) is the leading non-governmental organization in the area of agricultural economics in the country. Since its establishment in 1996, its mission is contributing to the development and sustainability of agriculture and rural areas in country. One of the most important features of the organization and its members is cooperation with different representatives of private and public sectors as well as governmental and non-governmental institutions in the country. AAEM is organizing the 12th International Conference and is inviting scientists and experts from the country and abroad to share ideas, experiences and scientific challenges in the area of food and agriculture.

The contents of the abstracts is sole responsibility of the authors.

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FOREWORD

The agri-food sectors in South-East European countries are facing numerous challenges in times of constant changes and "moving targets". Changes in agricultural policy, commodity markets, volatile prices and environmental impacts are closely related with challenges in competitiveness, management, technology and structural reforms.

Agricultural economists, as researchers and educators, show continuous interest in analysing, understanding and anticipating the changes and challenges in the given agricultural sector and overall economical context. Tackling the changes and challenges strongly depends on the institutional capacities, on one side, and on the research community, on the other side. Therefore, this requires continuous strengthening, intensifying analytical capacity, applying state-of-art scientific methods and tools for evidence-based recommendations. The business segment is also sensitive to sector's changes and challenges, hence the recommended practises affect their economic environment.

The organizers hope that with the focus of the topic "Changes & Challenges in South East European Agricultural Economics", the participants, especially the authors and presenters of papers and posters, will contribute towards promoting the role of agricultural economics in South-East European countries and will confirm and enhance its significance and relevance in the agricultural development.

This book of abstract includes more than 20 contributions from authors from the countries from the South-East European countries and we would like to thank all of them. The abstracts are presented in alphabetical order.

We would also like to thank our keynote speakers, prof. Dr. Emil Erjavec, Ms. Vilma Daugaliene and Prof. Dr. Dimitre Nikolov, and all the sponsors that have supported this event.

KEY SPEAKERS



Professor for Agricultural Policy and Economics and Dean of the Biotechnical Faculty, University of Ljubljana in Slovenia, and regular visiting professor at the University of Natural Resources and Life Sciences (BOKU) in Vienna.

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KEY SPEECHES

UNIVERSITY AGRICULTURAL ECONOMICS EDUCATION: CHANGING FUNCTIONS AND DEVELOPMENT OPPORTUNITIES

Prof. Dr. Emil ERJAVEC, Dean of the Biotechnical Faculty, University in Ljubljana, Slovenia

LAND CONSOLIDATION – A TOOL FOR SUSTAINABLE RURAL DEVELOPMENT

M.Sc. Vilma DAUGALIENE, FAO Chief Technical Advisor of the EU funded and FAO implemented Project “Mainstreaming of the National Land Consolidation Programme (MAINLAND)”

INTRODUCTION AND IMPLEMENTATION OF COMMON MARKET ORGANISATION MEASURES

Prof. Dr. Dimitre NIKOLOV, Professor at Institute of Agricultural Economics (IAE), Sofia, Bulgaria, and Team Leader of the Project “Introduction and implementation of Common Market Organisation measure”

LAND CONSOLIDATION – A TOOL FOR SUSTAINABLE RURAL DEVELOPMENT

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ABSTRACT

Discussions of the future European rural development policy started in September 2016. Participants at the Cork 2.0 European Conference on Rural Development have declared that an innovative, integrated and inclusive rural and agricultural policy in the European Union (EU) should be guided on ten policy orientations. Rural Europe is home to more than half of the EU population and covers more than three quarters of the territory. Rural areas are also important in the preservation of Europe's natural and cultural landscapes and heritage. EU support for investment in rural areas should focus on generating added value for society. Land management has a key role in the interface between citizens and the environment. Policies must incentivise the delivery of environmental public goods, including the preservation of Europe's natural and cultural heritage. Increased pressure on natural resources must be met by coordinated cross-sectorial policy responses. These should ensure the sustainable management of natural resources such as water, soil, and biodiversity, being the very means of agricultural and forestry production. There is a need to develop and mainstream innovative, science-based solutions that allow for producing more with less while ensuring that natural resources are at the disposal of future generations. Effective formats of knowledge exchange and advice should be developed and support

provided for the adoption of well-designed land management schemes. For achieving the above-mentioned objectives, in the EU regulatory framework is envisaged a possibility for direct and indirect support for land consolidation, as a tool for sustainable rural development.

In the late 1990s, after the fall of the former Soviet Union, a new political and economic reforms era has started in Europe. One of the first activities of the reforms were targeted to the land – a territorial basis for various economic activities. Each country chosen its own way to carry the land reform, keeping it high on the political and economic reforms' agenda, but already very soon it became evident that the result of such activities is not satisfactory, as the newly formed agricultural land parcels in rural areas were small and fragmented for efficient farming activities, not adjusted to the existing rural infrastructure.

The best tool to address the mentioned problems is the land consolidation. The Food and Agriculture Organization of the United Nations (FAO) is leading the process of methodological guidance on land consolidation, with the special focus since 2002, when the Munich Symposium was organised to address these issues.

Modern land consolidation could be defined as the process of rearrangement of the land parcels in a certain territory, aiming to enlarge those parcels, optimise farm holdings and establish necessary infrastructure, at the same time taking into consideration other rural development and environmental protection policy objectives. As land consolidation is by nature multi-functional, from the very

beginning of initiating the process, it is recommended to apply land consolidation with different approaches.

After regaining the independence in 1990, land reform based on the restitution of land ownership rights to the previous owners and their successors have started in Lithuania in 1991. Due to the restitution of ownership rights to the real property available in kind as well as conveying to the ownership of persons land parcels of equivalent value without equitable payment small parcels of cultivated land were prevailing, farms were formed without designing the layout of their land tenures. The fragmentation of land parcels encumbered organisation of agricultural activities and increased the costs of production, infrastructure in rural areas was poor. Disparities between rural and urban areas, also increased competition with the farmers in the other EU led to the introduction of a new land management tool – land consolidation. In the framework of the EU rural development policy land consolidation is seen a tool for solving jointly the issues of increasing the competitiveness of farms, environmental protection, fostering landscape, natural and cultural heritage, rational use of natural resources and improvement of the quality of life in rural areas.

Starting with the first pilot land consolidation projects in 2000, legal framework for carrying land consolidation projects was adopted in 2004. In 2008, National Land Consolidation Strategy was developed and adopted. Since 2004, land consolidation being considered as a tool for sustainable rural development in Lithuania, is supported under the EU funded Rural Development Programme.

Under the EU Delegation Agreement, FAO since March 2017 in the Republic of North Macedonia is implementing a project "Mainstreaming of the National Land Consolidation Programme (MAINLAND)". The main aim of the Project is to assist smallholders and family farms to overcome the problems arising from excessive land fragmentation, small farm sizes and insufficient agricultural infrastructure to increase productivity, competitiveness and efficiency of farms, thus enhancing the potential of the agricultural sector in the Country.

While implementing the Project, previous experiences in building up modern land consolidation in the Country gained through various international support projects that were on-going since 2008, also learning from the other European countries with long, as well as shorter experience in land consolidation, are taken into consideration. In addition, the Project identified linkages and creates synergies with the other FAO and EU IPA funded projects, thus putting efforts to create synergies and added value towards achieving the objectives of the MAINLAND project.

Key words: *land consolidation, rural development, EU, FAO, Europe*

INTRODUCTION AND IMPLEMENTATION OF COMMON MARKET ORGANISATION MEASURES

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ABSTRACT

The policy of CMO was given little emphasis in the overall accession agenda of R.N. Macedonia, in the period 2007-2013. The priority was mainly given to the introduction of direct payments and rural development support measures, and, the policy generally favoured a liberal approach with less-regulated market environment except for incidental non-trade barriers applied for import of wheat and flour. With the economic and financial crisis in 2009, the approach was slightly amended and markets regulation measures were incorporated in the national policy.

A system to monitor the markets and improve its certainty was established according to the Law on Agriculture and Rural Development provisions and aimed at improving contractual relations between economic stakeholders (farmers, processors, traders). It includes imposing additional requirements to the buyers of the agricultural products, their registration and having obligatory contracts for all trading transactions. In addition, a sectorial partnership with economic and social partners (the Sub-sectorial Standing Working Groups -SSWGs) at national level was set up to stimulate better market relations and foster private-public communication. However, the implementation of these policies has not been successful. It is estimated that many of agricultural products transaction are taking place outside the legal framework and that the SSWGs, after the initial enthusiasm, are not operational.

The new 2014-2020 National Strategy for Agriculture and Rural Development (NARDS) firmly recognizes the need for overcoming structural deficiencies as the key obstacle for increasing the competitiveness. Considering that restructuring of the sector is one of the key strategic objectives till 2020, the government has started with creating the institutional, legal and policy setup for implementation of restructuring policies (land consolidation, support to cooperatives, etc). However, the administrative capacity is still insufficient for upgrading current pilot phase activities into full-size implementation mode, while the beneficiaries of the policies are not fully informed about new opportunities. The other NARDS objectives toward increasing competitiveness are (i) improving the marketing of agricultural products, and (ii) envisage implementation of minimum quality standards according to the EU approximated Law on quality of agricultural products and respective by-laws.

To this end the present intervention logic will focus on better alignment of the legal environment to enable implementation of the selected priority policies. To address the gradual alignment of the national regulations with EU CMO policies and commodity regimes and strengthen the monitoring systems for market policies, the project activities have been designed to promote the role of SSWG as market monitoring committees, which will be also enabled to monitor the implementation of CMO related policies assist both public institutions and private actors to implement the demanding set of national marketing standards for fresh fruits and vegetables on the internal and EU export markets. This set of activities will be implemented mainly through capacity building activities of State Agriculture Inspectorate to perform the necessary controls and producers of fruit and vegetables to grasp the need for modernisation in reaching the market and policy requirements.

Key words: *CMO, introduction, implementation, North Macedonia*

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SCIENTIFIC ACHIEVEMENTS AND TRENDS IN THE DEVELOPMENT OF LIVESTOCK BREEDING

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ABSTRACT

Animal husbandry is essentially the processing of plants in highly valuable animal proteins, with a series of secondary products appearing. The efficiency of processing depends on the type of animals, the direction of production and the intensity of the utilization of animals, which also means the application of knowledge and scientific achievements. The effectiveness of the processing has been influenced by the special achievements in the field of animal feed production and animal nutrition, health protection with knowledge of pathological processes, achievements in the field of reproduction and selection using the methods of population genetics for assessing the animal breeding values. Genetic progress is increased by the application of artificial insemination, and more recently through embryo transplantation as well as linked methods for embryonic manipulation, cloning, and the introduction of recombinant DNA into the animal gene. All achievements in the area of animal husbandry contribute to better land use, which is a basic factor and minimum nutrition for the world's population.

Key words: genetic progress, efficiency in processing, livestock production

DIVERSIFICATION AS POSSIBILITY OF RISK REDUCTION STRATEGY AT SMALL BERRY FRUIT FARMS

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ABSTRACT

According to the data of the Agency for Statistics of BiH (2016), agriculture is the fourth most important sector in BiH, considering its share in total GDP. Taking into consideration the entire BiH agriculture sector, the most intensive development in the past period was the production of fruit, especially raspberries (M A W F, 2014). There are several reasons why orchard growing and especially strawberry fruit growing in BiH has spread faster than the rest of the sector over the past years (B e c i r o v i c and Z g a j n a r, 2019). First, the average farm in BiH has a modest land area. Therefore, in order to be able to generate enough income, production should be intensive to generate a high income per unit of production. This condition satisfies berry fruit production. Secondly, according to K u r t o v i ć et al. (2014) BiH has favourable climate conditions for the production of continental fruits and Mediterranean species. Thirdly, for these products market was provided in the previous ten years, which is not the case for most agricultural products on the BiH market. The majority of farms in BiH have low available land area and usually all labour required is provided by household members. Therefore, we have analysed a hypothetical farm as a representative of orchards growers, with a 0.5 ha of arable land, and main assumption was that family members provide all the needed labour (8,800 h). Further three different scenarios have been analysed with a focus on different diversification strategies. From that perspective production was limited to two production cultures (out of three observed) to be included in the production plan at once. In each of the three scenarios, it is possible to combine two different cultures (more different varieties of each). In the first scenario (S1-B/S) it was observed the possibility of combination of blueberries and strawberries production, in the second scenario (S2-R/S) production of raspberries and strawberries was tested, while the third scenario (S3-R/B) enables different combinations of raspberries and blueberries varieties.

The main purpose of this analysis is to observe how risk can be reduce with different diversification strategies and which are from risk perspective the most efficient production plans for such a farm. A linear program was utilised to prepare an optimal production plan, while quadratic risk programming served to analyse risk.

Results show that diversification could be significantly important possibility for risk reduction on such a farm. It is possible to reduce risk with capital and labour less intensive production activities. Production of highly intensive strawberry Clery has highest EGM, but also it is the riskiest production. In first two scenarios (S1-B/S and S2-R/S) if we include raspberries or blueberries in production plan it is possible significantly

reduce risk while decreasing of EGM is very low. Production of raspberries and blueberries (S3-R/B) has a little bit lowest EGM but significantly lowest risk. Detailed results have been further presented.

In the first scenario (S1-B/S), combined cultivation of blueberries and strawberries is observed. The maximum EGM in this scenario is achieved by the highly intensive production of strawberry Clery on total area. The farm would achieve 10,657 EUR of EGM, where revenues amounted to 17,514 EUR, and total variable costs present 39.15% of the total revenue. In such a case total variance, measured as standard deviation (SD), is 3,996 EUR, which is 37.50 % of the EGM and shows on relatively high variability. Further analysis of the E-V efficiency curve (S1-B/S) shows that with a slight reduction in total EGM farm would achieve a significant (16.37% – 31.47%) reduction of risk (SD). If optimal production plan includes also less risky blueberry Duke variety on 66% of arable land and strawberries on the rest, EGM decreases for 4.05%, however SD decreases for 24.90%. In other words, to reduce the risk for 1 EUR, it is necessary to sacrifice on average only 0.43 EUR of EGM. In average reducing risk for one (1 EUR) unit in this scenario (S1-B/S) costs 2.57 EUR.

The second combination of possible production of raspberries and strawberries (scenario S2-R/S) also gives optimal solution by production of 0.5 ha of strawberries Clery. Therefore, starting point is the same as in the first case (S1-B/S). With the reduction of riskiness of the production plan, the share of raspberry Willamette production significantly increases. The reasons are that production of Willamette is labor and capital less intensive than highly intensive strawberry Clery. The efficiency of the risk reduction is somewhat lower than in the case S1-B/S. For reducing SD by 25.09%, EGM decreases for 11.42%. In average reducing risk for one (1 EUR) unit in this scenario (S2-R/S) costs 2.56 EUR.

In the last case (S3-R/B), only raspberries and blueberries activities could enter in the optimal production plan. In such a case optimal solution would be cultivation of the blueberry variety (Duke) on the area of 0.5 ha. EGM is 10,017 EUR, which is 6% lower than in first two scenarios (S1-B/S and S2-R/S). However, on the other hand riskiness of such production plan is lower (SD is 2,982) for 25 %. For reducing production risk less and less blueberry Duke is included and larger share of intensive production of raspberry Willamette enters optimal solution. For larger decrease (>36%) of riskiness intensive production of blueberry Duke is no more included and optimal solutions enters only less risky blueberries Bluecrop and raspberry Willamette. In average reducing risk for one (1 EUR) unit in this scenario (S3-R/B) is most costly and amounts 3.25 EUR.

The highest cost for risk reduction is on such a farm in production plan with production of raspberry and blue berry (S3-R/B), where it is necessary to give up 3.25 EUR for decreasing risk for one EUR. In other two scenarios, production of strawberry – blueberry (S1-B/S) and strawberry – raspberry (S2-R/S), costs are almost the same with amount 2.57 EUR (S1-B/S) and 2.56 EUR (S2-R/S) per one EUR decrease of SD.

Key words: risk analysis, quadratic programming, small farms, berry production

HOW DO INVESTMENT SUPPORT MEASURES AFFECT THE ECONOMIC PERFORMANCE OF BULGARIAN FARMS?

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ABSTRACT

The sustainable economic development of agricultural holdings is largely conditioned by their investment activity. As in the first programming period (2007-2013) and in the current period, particular attention in the CAP and RDPs is given to measures encouraging structural investments. One of the objectives of these measures is to increase the economic potential of farmers. Investment support usually covers part of the total costs necessary for the realization of different duration (single, short, medium or long-term) programmes related to the investment activity in an agricultural (Dwyer, 2005). In parallel to the objectives of achieving economic sustainability of agricultural holdings, investment subsidies also relate to criteria subject to environmental protection requirements. The purpose of the paper is to present the results of ex-post and ex-ante analysis of the impact of investment support measures on the economic situation of the farms in the light of their investment activity.

Keywords: *agricultural investments, investment grants, net income, gross output, total costs.*

METHODOLOGICAL CONTEXT AND DOMAINS OF VALUE CHAIN ANALYSIS FOR POLICY MAKING: CASE IN REPUBLIC OF NORTH MACEDONIA

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ABSTRACT

Bringing national agricultural policy in line with the Common Agricultural Policy of EU, among other things, requires an understanding of how local agricultural producers with their production will fit into the EU single market. The general point that needs to be made in this regard is grasping the big picture on how agricultural products move through the value chain on their way to the final consumer. This is important not just for the actors involved, but also for the policy-makers since the logic of EU CMO policy is to reinforce the economic position of producers in the market. In this sense, analysing impacts of policy options through value chains provides decision makers and other stakeholders with anticipated evidence on likely changes directly induced by policies. The complexity of this task and the need for successful implementation of CMO measures in the Republic of North Macedonia required methodological approach that has been developed within the Project "Introduction and implementation of Common Market Organization measures" (financed by European Union and implemented by the Ministry of Agriculture, Forestry and Water economy of the Republic of North Macedonia, Europe Aid/139105/DH/SER/MK). Developed methodological approach that enables to assess on quantitative grounds the impacts of policy option have upon certain product (commodity), is presented in this paper.

Key words: value chain analyses, policy making, common market organization

PRODUCTION OF APPLES AS POSSIBILITY FOR FAMILY FARMS DEVELOPMENT*

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ABSTRACT

Most apple producers in Serbia are family farms characterized as small holdings with small economic power. As most of registered farms, analyzed family farm is still in the process of specialization of production. The paper analyzes the conditions and results of plantation establishment and production of apples on the family farm located in Rasina District in Central Serbia. The aim is to determine the cost effectiveness of invested funds for apple orchard establishment on the analyzed family farm.

Sources that were used in the preparation of the paper were written materials related to the production of apples and instruments of economic analysis, organization and business economics. As a primary source of information accounting calculations were used, technological table of apple orchard establishment, internal records and the pilot version of the business plan of apple producers at the family farm. For more accurate view and better monitoring of data domestic and foreign literature, internet web sites, available statistical data on the production of apples and publications related to apples production has been used. Methods used for the paper preparation were: calculation of plantation establishment, cash inflows and outflows for the period planned for orchard exploitation, and indicators of economic efficiency.

Total cost of planting of apple orchard on the family farm amounts to € 16,080 for one hectare. All economic indicators show positive results. In the assessment of static model of economic efficiency indicators of investment were used: efficiency, profitability and productivity, which also have positive results. The production is efficient, since the ratio is greater than zero. Planned production is profitable, because profits participate with 71% in total production value. Calculating productivity, it was found that production of one tonne of apples required 822 hours of workers' labour.

This study was aimed to determine economic effects of establishing the apple orchards on the family farm in Brus. Establishing apple orchard is certainly high-budget investment, but it can be concluded that the economic effects of raising apple orchards on the farm in Brus was economically justified and cost-effective, based on the analyzed result.

Key words: *production, apples, family farm, economic effects, development*

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STATE AND TENDENCIES OF THE IT APPLICATIONS IN SOUTH-EAST COUNTRIES

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ABSTRACT

Modern business trends in agriculture require increased productivity and efficiency of agricultural production in order to achieve a competitive position in the market. Population growth imposes a growing need for agri-food products, but also the necessity of preserving the environment. In order to ensure the long-term sustainability of the agricultural sector in a dynamic environment, it is necessary to make timely decisions. The use of information technologies in agricultural farms, primarily computers and the Internet, enables agricultural producers to access a large amount of information. The aim of this paper is to examine the current level of IT usage in the markets of South East Europe countries, especially in the agricultural sector, as well as to analyze the future trends of using modern technologies. In the paper were used the data of the Republic Statistical Office and the EUROSTAT database. Research covers the period from 2009-2018, in which analyzed the frequency of using computers, the Internet and e-commerce.

Key words: *information technologies, market, e-commerce, internet*

DEVELOPMENT OF ORGANIC AGRICULTURE AND ENVIRONMENTAL PROTECTION OF THE PESTERS PLATEAU

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ABSTRACT

International Federation of Organic Agriculture Movements - IFOAM, organic agriculture is based on four basic principles: the principle of health, justice, ecology, and general care. The principle of ecology completely, supports system of organic agriculture. Organic production are only one in a wide range of production methods, which are positive for our environment. In addition to preserving the environment and the environment, organic farming promotes proper nutrition and health of the population.

Although many locals and the leaders of the local self-governments examined areas, products from the Pestors Plateau are perceived as organic products, the steps in the certification of some traditional products have not been fully implemented. What's missing?

The paper presents the possibility of organic agriculture at the Pešterska Plateau in the function of environmental protection and the village. The data presented are the result of a field survey obtained through a survey of food producers and farmers, the investigated areas.

Summing and processing of data from the field using general scientific and mathematical statistical methods gives an overview of the potential for the development of organic agriculture in the Pestors Plateau, as well as factors that significantly impedes the transition from conventional to organic agriculture.

Bearing in mind the positive impact of organic agriculture on the environment, the paper presents a set of measures that manufacturers, state and local governments should take to encourage the development of organic food.

Key words: agriculture, Pester, ecology, organic food, sustainable development

ECONOMIC EVALUATION OF WILD FRUITS

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ABSTRACT

Regardless of their type, or whether they are higher (vascular) plants or fungi, wild fruits used for human nutrition have other indirect values besides of their market value and this value is commonly termed under the term "ecosystem values". This characteristic is mostly based on the fact that this group of fungi and plants are naturally grown, man does not cultivate or process them, but is only involved in the process of their collection in specific regions. In this respect there is a need for constructing models and techniques for their economic evaluation, which is different from the product market values, or market values solely based on the supply and demand relation of certain products. Wild fruits belong to the group of renewable natural resources which represent part of the biological funds and according to their location they are usually placed in the group of "Public goods", thus their exploitation is causing series of external effects (Externalities). In this respect, it is necessary to identify and specify these externalities in order to create an efficient system for management and protection of these resources. The aim of this paper is to analyze the theoretical techniques and methods that can provide base for building a system for sustainable use of wild fruits. Additional contribution will be provided in form of directions for their efficient management on the basis of theoretically and practically sublimated positive experiences.

Key words: *wild fruits, externalities, management, protection*

DAMAGE ASSESSMENT IN AGRICULTURE – FLOOD DAMAGES IN PERENNIAL CROPS

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ABSTRACT

Contributing to the already existing vulnerability and risks for the agricultural producers, natural disasters influence the development of the agricultural production and in most instances this influence has a negative connotation. Agricultural production is greatly reliant on weather conditions, and is often negatively affected by disasters related to this weather and climate circumstances. In August 2016, Macedonia and especially the region around the capital city of Skopje was hit by floods, causing considerable damage to the agricultural production in this region. This natural disaster is expected to have a prolonged impact and assessing the damage for the perennial crops is both important for the farmers, but would also contribute in the evidence based research on the topic. Therefore, the results presented in this paper are based on data obtained from actual data, collected immediately after the flood. The analysis include the reported damages in crop production, their structure, surfaces, etc. The damage estimations are based on standard valuation methods published in the Official Gazette of the Republic of Macedonia. The data set contains information that provide damage assessment, but also give accurate grounds for compensation of farmers who were most affected. There is an urgent need to mitigate the effects of natural disasters in the agricultural sector, as well as highlight the need of permanent insurance practices in the sector.

Key words: damage, evidence based, flood, natural disasters, Skopje region

Ivana Janeska Stamenkovska
Da se dodade

DEPOPULATION OF RURAL AREAS

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ABSTRACT

The thesis indicates the depopulation of the rural areas in Serbia during the period from 1961 to 2011. Based on the research on a number of indicators, there have been significant changes in the rural society and the rural areas in Serbia, primarily expressed through the processes of: depopulation, ageing and migrations that have affected socioeconomic and rural development. The theoretical framework for the sociological study of the villages was based on the monographic method for the qualitative and quantitative description of the village settlements and regions. The analytical method was used for the interpretation of cause and functional relations within the rural area. The analysis of documents, the official statistical data and publications (Population and households of Serbia according to the 2002 census, Population of Serbia at the beginning of the 21st century, Villages in Serbia; the changes in structure and the problem of sustainable development. Census of Population, Households and Dwellings in 2011, Census of Agriculture 2012) related to the process of depopulation of the rural areas in Serbia was used for the research. The changes occurred in the rural areas of Serbia have resulted in the depopulation of many villages which are without inhabitants now. Today's population structure in villages shows the trend of reducing the share of the young population and the increase in elderly population, all of which affect the demographic picture of the rural areas in Serbia. Such situation leads to the change in the structure of the working age population, with the further tendency of the village depopulation, especially in the mountainous areas where the fertile contingent has almost disappeared.

Key words: *depopulation, rural areas, deagrarization, migrations, demographics*

ANALYSIS OF FISCAL CASH REGISTERS INTRODUCTION AND TAX LEGISLATION NOVELTIES OF THE SUPPLEMENTARY ACTIVITIES ON THE FARM

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ABSTRACT

The main purpose of the research is to analyse the recent tax legislation of supplementary activities on farms and to determine if the implementation of fiscal cash registers affects its number. This survey covers 90 holders of supplementary activities in northeast Slovenia. It was determined that the implementation had mainly affected supplementary activities with a yearly income of 3500 EUR or less. 62% of respondents have been considering about resigning. 26% of holders with less than 3500 EUR of yearly income have resigned. Even though the analysis shows the implementation of fiscal cash registers is not the main cause of resigning, while 29 % of all holders resigned. In general, it represents 5.75% of all registered agricultural holders with supplementary activities. Research also includes farmer's feedback on legal novelties that have been implemented between 2015 and 2018.

Keywords: *fiscal validation, fiscal tax, supplementary activities, farms*

APPLICATION OF BANCASSURANCE IN FARM RISK MANAGEMENT

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ABSTRACT

In recent years there have been accelerated climate changes around the world that have a particular impact on the achievement of results in agriculture, primarily in plant production. Scientific predictions point to even more pronounced consequences of climate changes that reflect in the further increase in the variability of weather parameters and the emergence of extreme harmful events, such as droughts, floods and storm winds, which negatively affect the amount of the achieved yield of crops and fruits. On the other hand, agricultural production is a specific area of business that is also subject to the effects of price and economic risks. In order to prevent these risks, it is necessary to manage them, and bancassurance is just one of the new products for risk management in agricultural production. This refers to financial instrument that integrates banking and insurance offerings in the common financial market, and for farmers, this market product is a combination of credit and insurance that can stabilize their revenue, but also to secure invested capital in production. The aim of the paper is to present the theoretical basis for bancassurance, as well as the tasks that are taken over by the three main stakeholders in this business, such as an agricultural producer, a bank and an insurance company. The insurance company will realize its function by applying one of the modern insurance models, which can be AGR (Adjusted gross revenue), which represents a model where all crops and products that a farm grows and produces insure with only one policy. The insured event arises when the farm does not achieve the planned and insured revenue level during the production year. In this way, the farm is protected from all kinds of natural and economic risks. A practical example of using bancassurance in agriculture from the perspective of farmers is given in this paper, all with the aim of multiple protection of production under more favorable conditions of risk transfer.

Key words: farm, risk management, bancassurance, adjusted gross revenue

MOTIVATING FACTORS FOR ESTABLISHING INTERBRANCH ORGANIZATION APPLE SUPPLY CHAIN

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ABSTRACT

In economies with emphasized small-scale farming, the need for vertical cooperation is more than necessary in order to achieve economies of scale, but more importantly to achieve power and assure firm negotiating position in the unevenly distributed supply chain relations. However, post socialist experience with different forms of forced collaboration, left farmers with enduring resistance towards any institutional form of cooperation. Many factors support the occurrence and development of different types of producer's organization in agriculture: social capital and trust, formal and informal networking patterns, implementing mechanisms to govern group behaviour. The aim of this paper is to determine the motivating factors that should support farmers, traders and processors' cooperation by mapping their interpersonal and commercial relations on horizontal and vertical level. We follow two models from the recent reform of Common Agricultural Policy 2014-2020 as contract systems, Producer Organisations (PO) and Interbranch Organisations (IBO). A survey was conducted with previously defined key actors in the apple supply chain from one of the most significant apple producing region (Prespa) in the Republic of North Macedonia. The case of apple producers from two cooperatives, as well as traders and processors interested to participate in IBO, was included with the aim to define each stakeholders' interest in vertical integration, through establishment of a specific type of interbranch organization. The approach followed the methodology for empirical research (descriptive and analytical approach) applied in many European countries (European Commission, 2016). Furthermore, the analysis includes Social Network Analysis in order to map the informal networks of relations, identify key individuals and other entities that hold important position in this network, and accordingly the behaviour of different value chain agents. The results and recommendations are expected to provide base for depicting and proposing models of formal cooperation or interbranch organizations that would be context based, would effectively exploit the identified social capital and link all identified agents in the network.

Key words: apple supply chain, vertical integration, interbranch organization, social network analysis

THE MODEL FOR PREDICTING SOYBEAN PRODUCTION IN REPUBLIC OF SRPSKA

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ABSTRACT

According to the obtained results of production, soybean is one of the most important oilseeds in the world. The paper analyzes its production in the Republic of Srpska. The analyzed data refers to the period from 1996 to 2017. Time series data were obtained from the Republic Statistical Office of the Republic of Srpska. On the basis of the analyzed data of the time series by applying the ARIMA model, the movement of the production and economic indicators of this observed oil seed can be predicted. Production indicators, related to the achieved surface, production and yield, the economic parameters related to prices and price parities and the prediction, included the period until 2022.

The application of the time series analysis by the ARIMA model in this research has been encouraged by an increasing interest in predicting the movement of production parameters and by making correct and rational decisions concerning the further development of individual production, as well as entire agriculture. In this paper, we tried to select the appropriate model from the ARIMA class, which will adequately describe the observed time series data. The process of the models selection, that was conceptualized by Box and Jenkins, consisted of three phases: model identification, model parameter evaluation, and model adequacy check.

The obtained results show that, in the following years, a constant decrease of this oilseed surface in the Republic of Srpska is expected, and that the production and soybeans yield in the five-year prediction period would show oscillatory movement. As far as the economic indicators of soybean (price and price parity) are concerned, they will show a tendency of a constant growth in the next five-year period.

Possible further directions of similar research should be related to determining the correlation of precisely determined factors to the current production of soybean, as well as to its price competitiveness towards other crop-based cultures and production inputs.

Key words: prediction, analysis, soybean, ARIMA model, industrial plants

THE ROLE OF HIGHER EDUCATION INSTITUTIONS IN THE KNOWLEDGE AND INNOVATION SYSTEM IN AGRICULTURE IN EUROPEAN COUNTRIES

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ABSTRACT

The Agricultural Knowledge Systems (AKS) was introduced in 1960s aiming to facilitate transfer of knowledge to farmers. Initially, it was constructed as the linear model with separate roles of universities and research institution as the creators of knowledge, extension services as communication channel, with training and advisory role, and farmers as final users. The increased significance of information and introduction of computers resulted in extension of the AKS concept into AKIS – Agricultural Knowledge and Information system in the 1970s. This process introduced the fourth set of actors into the model, usually called 'support systems' including various organization outside the research, education and providing advice, such as credit institutions, inputs, producers' and consumers' organizations, etc. It became no longer linear model, but a system that appreciates the complexity of knowledge, and includes interactions between all actors. Recently, Agricultural Knowledge and Information system evolved to the Agricultural Knowledge and Innovation system, also known as AKIS. Changing the focus from information to innovation resulted in opening up AKIS to more public tasks and to support of innovation (EU SCAR, 2012).

AKIS oversees the whole knowledge exchange system: the creation of knowledge, its disseminations and the extent to which it is applied. All these processes have undergone severe changes in the last decades. The knowledge is co-created by different actors: scientist, advisers, enterprises, NGOs. Even farmers, who have been traditionally seen as the knowledge users, interact in the process of its creation. Complexity of knowledge and innovation processes implemented in rural sphere demand the creation of networks in order to pass them through the whole system. This implies that higher education institutions, such as universities and faculties, deliver part of their activities, related to education and knowledge transfer, to other actors in AKIS.

The AKIS is composed of number of education and research organizations and extension services, under the umbrella of ministry in charge of agriculture, farmers and other persons, and the links and interactions between them. The structure of this system, its organisation and management can vary a lot, depending on the country or sector. European countries have different structure of AKIS varying from very fragmented to strong systems integrated in networks. This diversity and the recent transition of AKIS system resulted in intense academic and practical research. The focus of these activities were mainly on providers of extension services in agriculture, their number, organisation and finance, main users of their activities depending of the structure of agricultural production, size and number of farm, etc. However, the process of knowledge creation is also rapidly changing, which demand to re-evaluate the position and role of higher education institution in this system and their position in different networks created with other stakeholders.

Universities and faculties are one of the core actors in knowledge and innovations systems in agriculture. The aim of this paper is to analyse the position of higher education institutions in the AKIS systems of European countries. This can be seen as the extension of research done in EU and Western Balkan countries related to the structure of AKIS and performance of providers of advisory work in agriculture. Based on the reports for the AKIS inventory of the PRO AKIS project and other available documents, this paper summarises the various positions higher education institutions can have in AKIS and the links with other actors in the system.

The results of the research indicate that universities can be on the margins of the AKIS with poor interactions with other stakeholders like in Greece, Hungary, and partly Poland (related to the link between research and farmers), or like in Bosnia and Herzegovina in neighbouring countries. In other cases, higher education institutions are in the centre of this system with strong relations with all or most of actors, as is the case in Denmark, United Kingdom and to a certain extent in Romania. Between these two extremes there are many different solutions. Regardless the position of faculties and universities in AKIS system, they have the obligation to generate new knowledge or adapt existing knowledge. If the linkages between them and other actors are weak, they are facing insurmountable difficulties in transferring such knowledge to farmers.

The paper suggests two paths for more intense inclusion of higher education institutions in AKIS. First, education and research are core activities of these organizations which should remain as such, but the focus of education has to change. Courses on agricultural extension have to be widely introduced in university curricula (Koutsouris, 2014). This will contribute to the improvement of the AKIS system and accelerate the creation of new knowledge. In addition, students express great interest in this topic, as shown in the analysis carried out on the Faculty of Agriculture in Belgrade. Two courses related to the extension and advisory service in agriculture are available as optional on the fourth year only for students in the department of agroecconomics. Data show that 76-85% of students, depending on the school year, choose those courses. Agricultural engineers specialised in agroecconomics participate with 8.2% (in 2018) in the total number of agricultural advisors in Central Serbia. This means that maximum 8% of advisors have previous education related to extension service, which is insufficient.

Second, new models of cooperation between higher education institutions and other stakeholders in AKIS have to be introduced. European universities are stimulated to develop their missions and new models for the way they operate (EU SCAR, 2012). The nature of AKIS is in constant change meaning that the structure and relations among consisting elements have to change as well.

Key words: *AKIS, universities, extension and advisory service, transition, Europe*

METHODOLOGICAL APPROACH FOR DEVELOPMENT OF DIGITAL AGRICULTURE BASED ON THEORETICAL MODELS

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ABSTRACT

Digital Farming describes the evolution in agriculture and agricultural engineering from Precision Farming to connected, knowledge-based farm production systems. Digital Farming makes use of Precision Farming technology, yet – in addition – also takes recourse to intelligent networks and data management tools. The aim in Digital Farming is to use all available information and knowledge and thus to enable the automation of sustainable processes in agriculture. In the paper are described the methodological approach use in the project “Theoretical models for development of digital agriculture”.

A numbers of modern scientific methods will be used to achieve the objectives of the study: systematic and comparative analysis; monographic analysis; questionnaire survey; expert evaluation; mathematical and statistical methods - the main component method, cluster analysis, the statistical group method, the analytical network process. Including mathematical and statistical methods together with others will help to better account for dependence on factors; to determine more precisely how the level of digitization can help farmers and how digitization can be used in the most effective way in different types of farms.

The implementation of the results achieved in practice will lead to solving a number of socioeconomic issues and significant economic results in agriculture and rural areas:

- provide a new framework for analyzing and assessing the impact of introducing the digitization of farms of different types, the different sectors of agriculture and regions of the country;
- provide new tools to support the design of the farm strategy, organizational modernization and collective action, as well as to improve public policy and forms of public intervention in the agrarian sphere;
- allow a more realistic forecast of the likely prospects for development of farm structures by types, sectors of agriculture and regions of the country in the specific conditions of EU membership;
- help to build viable and more efficient farms, leading to sustainable rural development and raising farmers' incomes.

Key words: digital agriculture, sustainability, development

POTATO AND BEAN PRICE CHARACTERISTICS – COMPARATIVE ANALYSIS: SERBIA, MACEDONIA AND ENTITY OF REPUBLIC OF SRPSKA (BOSNIA AND HERZEGOVINA)

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ABSTRACT

Subject of research in this paper are prices of potato and bean, two important kinds of vegetables for Serbia, Macedonia and Entity of Republic of Srpska.

The main goals were to, based of quantitative analysis, find out tendencies in prices movements, and to make a comparative analyses of prices of potato and bean in mentioned countries (entity).

The parameters of potato and bean price in Serbia, Macedonia and Entity of Republic of Srpska (Bosnia and Herzegovina) were analysed in the period 2012-17. Average year prices were comparative analyzed. Prices are in first step converted in euro per ton, because of comparative analysis. Quantitative analysis was performed by using descriptive statistics method, and we used average annual rate of changes to discover the tendencies of changes in the analysed period.

In Serbia, there were about 64,000 hectares of potato. Average year price of potato in analysed six year period was 203.81euro/ton. Price was changing in interval between 164-248 euro/ton. Variation of prices in observed period was middle, about that shows coefficient of variation (CV=13.95%). Price of potato in Serbia shows negative tendency. Annual change rate in analysed period was -2.76% in average per year.

Average year price of bean in Serbia in analysed period was 1,615euro/ton. Price was changing in interval between 1,182-2,213euro/ton. Variation of prices was high, coefficient of variation was 25.78%. Price of bean in Serbia shows positive tendency (contrary than potato). Annual change rate in analysed period was 3.54% per year in average.

In Macedonia were about 13,000 hectares of potato. Average year price of potato in observed period (2012/17) was 276.20euro/ton. Price was changing in interval between 224 and 380euro/ton. Variation of prices in observed period was high. The coefficient of variation was 21.96%. Price of potato in Macedonia shows slow positive tendency. Annual change rate in analysed period was 1.79% per year in average.

Average year price of bean in Macedonia in observed period was 1,830euro/ton. Price was changing in interval between 1,637 and 2,110euro/ton. Variation of prices was minimal. The coefficient of variation was 10.41%. Price of bean in Macedonia shows minimal negative tendency (almost stagnation). Annual change rate in analysed period was -0.05% per year in average.

In Republic of Srpska were about 15,000 hectares of potato. Average year price of potato in analysed six year period was 229.91euro/ton. Price was changing in interval between 159 and 333 euro/ton. Variation of prices in observed period was high, what shows coefficient of variation (CV=28.47%). Price of potato in Republic of Srpska shows very high negative tendency. Annual change rate in analyzed period was -9,83% per year in average.

Average year price of bean in Republic of Srpska in analyzed period was 2,081euro/ton. Price was changing in interval between 1,928 and 2,164euro/ton. Variation of prices was extremely low, coefficient of variation was only 4.47%. Price of bean in Republic of Srpska shows positive tendency (contrary than potato). Annual change rate in analyzed period was 2.34% per year in average.

The lowest price of bean was also in Serbia. In Macedonia price of bean was 13.3% higher. In Republic of Srpska was the highest price of bean, higher 28.9% than in Serbia, and 13.7% than in Macedonia. Prices of bean show positive tendency in Serbia and Republic of Srpska, while in Macedonia price shows insignificant negative tendency.

In general, Serbia shows the best result of comparative analysis of two analyzed kind of vegetables (lowest prices, relatively stable variation and good tendencies). In Macedonia and Republic of Srpska prices are significant higher, but an average salary in this countries are higher. Positive in this countries are stable price of bean, and high tendency of potato price decrease in Republic of Srpska.

Key words: *potato, tomato, price, Serbia, Macedonia, Republic of Srpska*

TPOLOGY OF FARMS IN AREAS WITH NATURAL CONSTRAINTS IN THE REPUBLIC OF SERBIA

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ABSTRACT

The aim of the research is to establish typology of farms in areas with natural constraints (ANC) in Serbia that could be used for developing mathematical models to test impact of different policy scenarios. This question is important for Serbia, because current agriculture policy is not sensitive to the diversity of farm types and practices in areas with natural constraints causing difficulties in achieving sustainable income of farmers, as well as preservation of natural resources (Bogdanov, 2014). Due to the diverse resources, farms in these areas will react differently on agricultural policy change. Therefore, identification and characterization of farm types is crucial for designing effective policy instruments adjusted to characteristics and circumstances of specific groups of farms.

Classification schemes have been widely used in agricultural research in order to describe and analyze diversity of farming system (Emtage, 2004). Farm classification schemes have been developed and evolved over time, from those based on structural characteristics of farms, to those that deal with the multifunctionality of agriculture (van der Ploeg et al., 2009). Strength of any farm classification depends on its ability to capture the differences of farming systems, in a way that distinguished farm groups show maximum similarities within group, and significant difference between group of farms (Köbrich et al., 2003; Iraizoz et al., 2007). Recently, farm typology development is usually based on one or combination of two approaches – qualitative or quantitative (Iraizoz et al., 2007; Pineaar, 2013). Our research was based on quantitative approach that highlights advantages of quantitative typification techniques, compared to qualitative methods based on expert knowledge (Kostrowicki, 1977; Kobrich et al., 2003; Robles et al., 2005). This approach is also recommended when there is sufficient empirical information on farm characteristics. Quantitative approach comprises six steps to develop typology of farms: a) establishment of the theoretical framework; b) selection of variables; c) data collection; d) factor analyses; e) cluster analyses; and g) validation (Kobrich et al., 2003). Theoretical framework defines the purpose of typology development, while selected variables define differences between farms. After data collection, next two steps include application of techniques for data reduction and data grouping in order to develop specific groups of farms. The final step is validation of the typology results to ensure their correspondence to reality.

Areas with natural constraints in Serbia are diverse, therefore research was carried out in mountainous area of East and South Serbia, that represent sufficiently homogeneous territory. Several reasons influence the choice of research area: 1) delimitation of ANCs in Serbia is aligned with EU definition only in one criterion which refers to mountain areas (Official Gazette of RS, No. 39/16); 2) mountain areas occupy 89% settlements, 74% farms and 73% UAA of the total ANCs territory (Census of Agriculture, 2012); and 3) previous research in Serbia found that mountain areas of

East and South are rich in natural resources that are important for development of local rural economy and preservation of biodiversity (Bogdanov et al., 2008; Đorđević-Milošević and Milovanović, 2012).

Data collection was organized using a stratified simple random sampling. Sample included 371 farms. Face to face surveys were conducted during July-August 2018. Questionnaire contained information about socio-economic and structural characteristics of farms, such as land use, livestock heard by types and categories, crop and livestock production, farm labor, income sources and expenditure, facilities and equipment, attitudes on agricultural policy, etc.

To determine farm types, authors used multivariate analysis (Factor and Cluster Analysis), as very common techniques applied in studies on farm typology (Iraizoz et al. 2007; Castel et al., 2011; Rupak et al., 2014; Pineaar and Traub, 2015). Factor analysis was used to reduce the number of various variables to smaller set of factor that will be used in cluster analyses. The objective of cluster analysis is to identify groups of farms that are relatively homogeneous within groups and heterogeneous between each other. Selected farm types can be used to evaluate impact of different policy solution. It is expected that homogenous group of farms will respond to policy change in similar way. The dataset was prepared and will be analyzed using IBM SPSS Statistic Amos 23.

The research results will identify predominant farm types in ANC's in terms of their livelihood and economic system. Description of identified farm types will reveal specific features of farms that could be of crucial importance for designing agricultural, as well as social and ecological policy. Large ratio of farms in Serbia would benefit from ANC support, since according to the official definition of ANC's 40% of territory, 30% of total population, 29% of farms, and 24% of UAA is located in these areas (Census of Agriculture, 2012). However, lack of empirical research on these issues in Serbia hinders creation and implementation of effective policy instruments. Research results would provide guidelines for evidence-based policy that is tailored to regional diversity and structural characteristics of farms.

Keywords: *farm types, areas with natural constraints, multivariate analysis, Serbia*

THE CURRENT TRENDS OF THE AGRICULTURAL SECTOR IN SOUTH-EAST EUROPEAN COUNTRIES

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ABSTRACT

The agricultural sector is a very important factor in overall economic development in the Southeastern European countries (SEEs). The significance of this sector is reflected in the fact that it certainly represents the central feature of social and economic development of rural areas in Southeast Europe. The countries of Southeastern Europe are mainly located on the Balkan Peninsula, and their number largely depends on the observer's point of view. Countries that are most frequently included in the region and also included in this study are: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Serbia, North Macedonia, Montenegro and Greece.

According to Volk et al. (2014) agriculture in the Southeastern European countries (SEEs) is very diverse in terms of natural and structural conditions, development status, and the manifold production potentials. It carries prominent historical and social components and great economic importance to rural development. The eight countries of Southeast Europe (SEE8) trail their Western European neighbors in income and in other measures of development, but the differences among the SEE8 are as striking as their similarities (Broadman et al., 2004).

The aim of this study is to present and analyze selected agricultural development indicators that are important in SEEs, in order to carry out a comparative analysis of the SEEs region, but also to compare the results with the EU levels. This analysis is based on available statistical databases from statistical offices and other institutions dealing with agricultural statistics, such as Eurostat, Faostat, World Bank Group.

The selected indicators used in this study were formally divided into three groups. The first group of indicators relates to agricultural land use, the second one refers to agriculture in the economy, and the third group includes indicators related to trade in the sector of agriculture. For comparison of selected indicators related to the agriculture sector between SEEs, as well as their comparison with the EU States, the period from 2009 to 2017 was selected. The available data was analyzed using standard statistical tools and instruments: average value, the coefficient of variation (CV) and the change rate (r) for the observed period.

Available data on agricultural land use (first group of indicators) refers to agricultural land (% of land area), arable land (% of land area) and permanent cropland (% of land area). Analysis and results of this group of indicators indicate some differences among selected countries in the share of land area that is arable. The largest share of agricultural land in total land area in the observed period was recorded in Greece (53.8%), and the lowest in Croatia (25.6%) and Montenegro (27.8%). Other SEEs countries had a share of 40% and more on average, and that is about the average achieved in the EU (43.6%). At the same time, in Montenegro the share of agricultural land decreased by about 6%, and represents the largest decrease in the observed region. Macedonia is a country with an increase in the share of agricultural land,

while in the EU countries that share decreased for 0,54%. In terms of arable land, Bulgaria and Serbia are the countries with the highest share, and it is higher than in the EU countries (25,4%). The only countries in SEEs region with increased share of permanent cropland in observed period are Bosnia and Herzegovina (0,30%) and Macedonia (1,93%).

Agriculture in economy is represented by second group of indicators and includes data on GDP and value added in agriculture (current US\$ and share of GDP). The results obtained in the observed period indicate that positive change rate of the share of agriculture in value added (% of GDP) is achieved only in Greece (3,20%) and Albania (2,49%), which are also above the positive change rate achieved in the EU countries (0,53%). Very important indicator is employment in agriculture, and it ranges from about 6% in Montenegro and Bulgaria, over 40% in Albania, and between 10 and 20% in other SEE countries. The average share of employment in agriculture in EU is much lower (4,7%) than in SEEs region, with the negative change rate at about 2% in the observed period.

As regards trade in the sector of agriculture, indicators in terms of trade as a share of GDP, as well as agricultural raw materials imports and exports were analysed. The sum of exports and imports of goods and services measured as a share of gross domestic product achieved a positive change rate in all SEE countries in the observed period, and the same situation is in the EU countries. Agricultural raw materials imports ranged from 0,9 to 1,5% as a share of merchandise imports, and agricultural raw materials exports from 0,6 to 6,5% as a share of merchandise imports. In SEE countries agricultural raw materials exports are on average generally higher than imports, and all countries except Greece have achieved an increase in agricultural raw materials exports (data for Serbia and Montenegro were not available).

The comparative analysis of agriculture sector indicators within SEE region and with the EU, aimed to present the main characteristics of agriculture in the SEEs. It can be concluded that agriculture has a very significant role in economic development in all SEE countries, in terms of share of GDP and employment, as well as in terms of agricultural land use and in terms of imports and exports in the agricultural sector.

Key words: *agriculture, indicators, development, SEEs*

CHALLENGES IN FUNCTIONAL RELATIONS BETWEEN RURAL AND URBAN AREAS, CASE STUDY OF BANJALUKA CITY

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ABSTRACT

Rural-urban relationship can be defined as spatial and sectoral flows that take place between rural and urban areas. Spatial flows include flows of people, goods, money, technology, information, knowledge and even waste. On the other hand, sectoral flows are usually flows of agriculture products from rural to urban areas, and on the other hand, goods produced in urban centers that circulate to rural areas. The articulation of rural-urban relations is reflected in all forms of population migration, daily, weekly, monthly as well as in the production of goods, consumption, financial and investment relations, exchange of money, goods, social relations between relatives and friends in rural and functional environments. Different types of interaction between rural and urban areas have the effect of improving economic, social, cultural and political dimensions in both areas, separating these two areas by their type of activity.

Rural and urban types of regions have different resources that can be used in a complementary way. Depending on the proximity of the urban center and the functions of the areas, rural regions can be classified as suburban, agricultural and remote type areas. The aim of the research was to present functional links between rural and urban areas, which includes sectoral and spatial flows between rural and urban areas in the territory of the city of Banja Luka. The subject of research included business entities and rural households from these areas. For most of the surveyed indicators, data for the situation in two periods were collected, for the period before 1991 and today. The paper aims to determine the functions of certain areas, their strengths, unused and utilized resources, the frequency of interaction with the urban environment, and the perspective of suburban, agricultural and remote type areas in the context of interaction with the urban environment. Using the method of a structured questionnaire, results of the research that reflect the demographic, economic, social and cultural aspects of the links between rural and urban areas are obtained.

The paper presents various functions of rural areas depending on the type of area and their changes, starting from the suburban areas dominated by the secondary and tertiary sector, agricultural areas where the primary sector is the most prevalent, to the most remote areas. Research results show that rural areas of suburban, agricultural and remote type have well developed spatial and sectoral flows with the city of Banja Luka. At the same time, these relations are challenged with unfavorable demographic structure, lack of employment opportunities in rural area and the lack of initiatives and programs for utilizing the available resources. Spatial flows such as the flow of people, goods, money, technologies, are clearly present in the interaction of the suburban type of the area with Banja Luka. The main description of the interaction of the agricultural type of the area with Banja Luka can be seen through

sectoral flows, where most of the respondents are engaged in agricultural production and sell their products in the urban part of the city through short and long distribution channels. The remote type of area possesses strongly dependent and conditioned connections towards urban areas, due to the lack of public or specific infrastructure. Dependent relationships are mainly reflected in the purchase of personal consumption goods, visits to institutions and events that are not present in these areas. In all three types of areas, people's flows are noticeable, where most of the population in these areas has permanent employment in the city. Good infrastructure connection of rural areas with the city of Banja Luka enables the rural population easy and quick access to the city.

After analyzing the existing situation in rural areas and determining their functions depending on the type of area, possibilities have been explored to establish the interaction of rural areas with the urban center and their potential improvement. The perspective of the development of functional links between rural and urban areas in Banja Luka could be based on a rural-urban partnership. The concept of rural-urban partnership would be based on the potential of these areas. Urban and rural areas have different descriptions of functions that can complement one another and create better socio-economic performance. Studies on the nature and extent of urban / rural connections have identified the key concept of "functional regions", which are defined by their socio-economic integration rather than administrative boundaries. In all EU member states, local and regional authorities have built rural-city partnerships to better exploit the potential of such regions.

Key words: *rural and urban areas, rural-urban interaction, functional regions*

IMPLICATIONS OF TRANSPORT ON FINANCIAL AND ENVIRONMENTAL PERFORMANCE IN AGRIBUSINESS

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ABSTRACT

Transport as an activity from the tertiary sector of the economy has significant implications for the activities of other sectors, including agriculture and agribusiness. The financial implications of transport on agriculture and agribusiness are twofold. On one hand, transport adds value to biological assets and agricultural products in a way to ensure their availability to the buyers/consumers. In other words, the value of agricultural products on a remote farm, where they are in fact inaccessible to most consumers and value in the immediate vicinity of markets is not the same. This is not only due to the deterioration of certain products that have to be transported in the short term to the cooling chain, but also due to the fact that the location of a particular asset is recognized in the Statement of Financial Position when measuring its fair value.

Transportation costs are an integral part of logistics costs and are primarily related to transport costs and insurance costs that depend on transport clauses. Transportation costs represent a significant determinant of total operating costs, and therefore the selling price, which affects the competitiveness of products and as such they affect the achieved business result. For the above reasons it is necessary to minimize the transportation costs through the optimization model. This contributes to the optimization of total operating costs. The management accounting, through its own instruments, can support the process of finding the optimal transport program as well as making appropriate decisions about the location of the processing capacities, providing, among other things, information on the amount of incurred and potential transportation costs, as well as the benefits of a particular solution. Optimization of transportation costs also presupposes identifying the amount of goods to be transported in each trip, as well as determining the route itself. The imperative of competitiveness assumes that the delivery speed is also taken into account.

When it comes to environmental impact, transport as a significant source of harmful emissions has great implications for the ecological performances of the agribusiness sector. In order to find the optimal relationship between the contribution to the creation of value and the amount of incurred expenditures (both operational and environmental), it is necessary to clearly identify and quantify the effects of transport. In this paper, the optimization of transport costs is observed at two levels - through the supply chain and during the life cycle of the product. In other words, in modern business conditions, the entire supply chains are competing with one another, and that is why the optimization of costs in the supply chain is the basic assumption of their efficiency. On the other hand, the concept of the product life cycle observes all the costs and impacts of a particular product has made on the immediate environment, from the moment of its creation until the final use and disposal.

The aim of the paper is to point out the importance of respecting the financial and environmental effects of transport in the decision-making process of agribusiness management. Therefore the transportation problem is realized as an important element for improving the competitiveness of agricultural producers and positioning their products at the local and global market.

In the paper there were used several methodological procedures, such as methods of analysis and synthesis, deduction method and the desk research method.

Key words: *transportation costs, management accounting, agribusiness, competitiveness*

SUSTAINABLE MANAGEMENT OF THE ENERGY RESOURCES OF SERBIA

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ABSTRACT

Energetics has been and remained the key factor of economic changes and economic development to date. If the energy sector is stable, modern, and organized in a quality manner, it also implies welfare for the economy as a whole. Changes in the significance and use of energy in the economy require the professional management of energy development. Irrespective of modern technology and the key discoveries in energy transformation and concentration, it has not declined in significance. On the contrary, energy is the basis of the human activity. On the other hand, the present structure of the primary sources of energy at the global level cannot follow the trend of increasing demand for energy. The limited reserves of the non-renewable sources of energy, especially of crude oil, require our turning towards the renewable sources of energy.

The energy crisis of today is not only an expression of the bad condition of natural sources, but a consequence of the global policy for the exploitation of the existing sources of energy. The current condition of energy resources is a consequence of a monopolistic policy for big business and the New World Order founded on it.

According to the assessments of the International Energy Agency (IEA), a further increase in primary energy consumption is expected in the period to come. Because of that, it is necessary to strategically plan the development of the energy sector both from the general developmental, technological-economic, and social-ecological points of view.

The fact that Serbia has a relatively high energy consumption growth rate, that it is poorer in primary energy reserves in comparison with the world average, refers us yet more to the rational use of the existing reserves of energy and also to the production of energy from renewable sources: solar, the energy of the wind, geothermal, biomass, the energy of the tide and the waves of seas and oceans, and so on.

The paper addresses the issues in the field of the sustainable development of energetics, safety and energy efficiency, as well as a future development of energetics in Serbia based on the renewable sources of energy. The economic effects of the production of energy from renewable sources have also been analyzed.

Keywords: energetics, renewable sources of energy, energy resources, sustainable development

CHALLENGES IN THE IMPLEMENTATION OF THE EIP-AGRI INTERACTIVE INNOVATION APPROACH IN BULGARIAN AGRICULTURAL POLICY

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ABSTRACT

The paper critically reviews the potential of Bulgarian agricultural policy to implement the EIP-AGRI “interactive innovation approach” (IIA) and to stimulate interactive partnerships among the AKIS actors. It draws from the current shift within agricultural studies where innovation is no longer regarded as a simple, linear process. Instead, agricultural innovation is becoming recognised as “a complex, interactive process” (Klerkx and Leeuwis 2008) of cooperation between actors with different types of knowledge. Namely cooperation is defined as a critical success factor for the production of innovation (Tödtling & Trippel 2005; Edquist 2006; Kline & Rosenberg 1986). This shift in the agricultural studies is echoed in the EU agricultural policies in support of innovation as well. For many years, the innovation regime supported through the EU Common Agricultural Policy (CAP) has been the model of linear innovation. In this regime, new knowledge was developed through research, distributed by advisory and education systems and put into practice by the farmers. However, since the launch of the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) by the European Commission in 2012, this regime is starting to change. The EIP-AGRI adheres to the ‘interactive innovation model’, using bottom-up approaches and linking farmers, advisors, researchers, businesses in networks that are centred around the farmers’ needs. This approach is aimed to help not only the co-creation of innovation but also to speed up the introduction of innovative ideas through the generation of co-ownership.

The EIP-AGRI initiative aims to be a leading instrument in promoting the IIA nationally within the member states. The national Rural Development Programmes (RDPs), together with Horizon2020 RI programme, are one of the two strongest policy pillars to introduce the concept on national grounds throughout the EU. This means that the national policy context is a very important factor for the successful implementation of the IIA. As an EU member-state Bulgaria transferred Regulation (EU) 1305/2013 regarding the implementation of issues relating to the EIP-AGRI into its RDP 2014–2020 and programmed the respective EIP measure (measure 16 “Co-operation”). However, up to April 2019 the Measure has still not been launched, although a draft of the measure’s regulations has been developed. Neither the national RDP 2014–2020, nor the EIP measure’s draft regulations (the Directions for implementation of the measure) provide definition of “interactive innovation” or guidance for the application of the EIP-AGRI IIA. The absence of a clear top-down definition of interactive innovation in the policy documents impacts its bottom-up understanding of various AKIS actors, including members of the Thematic Working Group (TWG) formed to develop the regulation of the EIP measure within the RDP.

Against this background the paper hypothesises a rather negative scenario for the impact that the eventual implementation of the EIP measure might have on fostering

interactive innovation process in Bulgarian agricultural sector. The non-activation of the co-operation measure from the previous RDP 2007-2013 and the lack of activation of the EIP measure in the current RDP a year before the end of the programme period raise questions about the capacity of the agricultural policy to address important challenge within Bulgarian NIS: the need of fostering partnership and cooperation between the AKIS actors.

Key words: ☺☺☺

COMPETITIVENESS OF CONVENTIONAL AND ORGANIC RICE PRODUCTION IN BULGARIA

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ABSTRACT

Bulgarian rice production has old tradition from centuries and has become an economic and environmental necessity. In Bulgaria there are favourable climate and soil conditions, modern rice irrigation fields, irrigation systems, water resources, good base for storage and processing of conventional and organic rice production. There are three main areas for rice production in Bulgaria – Pazardjik, Plovdiv and Stara Zagora.

In order to assess the competitiveness of rice production in Bulgaria the research method of Ballasa Index is used. Ballasa Index is used to identify strong and weak export sectors of a given country. It is calculated by comparing the export share of a given sector in the total export of the country, related to the export share of this sector in the total export of a group of countries. If the index is greater than one, the sector in a given country has competitive advantages over the countries with which it is compared.

In Bulgaria the Ballasa Index for rice export for the entire researched period remains smaller than one. The conclusion from this method is that this is not a good sign for Bulgarian rice competitiveness.

Key words: *rice, competitiveness, Ballasa Index, Bulgaria*

THE NECESSITY OF KNOWLEDGE, SERVING THE NEEDS OF THE BIO-ECONOMY IN BULGARIA

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ABSTRACT

The purpose of this paper is to analyze the knowledge needs of the bio-economy in Bulgaria. In some European countries have been already identified new business models, technologies and knowledge related to resource efficiency, improved management solutions and services to reduce environmental impact as well as sustainable development. The main task of the bio-economy is to achieve economic growth in the agricultural sector, to improve the marketing of farms and to increase the competitiveness of the economy. Bio-economy is the maximum utilization of all organic sources from agricultural production and through modern innovative biotechnology, they become secondary end-use products. The methodology is based on an adapted approach, has been applied based on a monitoring system, the accumulated knowledge in the scientific community, the motivation among farmers, the non-governmental sector and others, stakeholders, group discussions (focus groups). The results suggest: identifying knowledge needs and technological expertise needed for regional-specialized bio-economies; clarifying the mechanism for delivering knowledge; a network of knowledge transfer networks; assessment of knowledge in the field of bio-economy.

Key words: *bio-economy, agriculture, economic growth, knowledge, Bulgaria*

NETWORKS IN THE MACEDONIAN ORGANIC PRODUCTION CONTEXT

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ABSTRACT

Economic performance and competitiveness of commercial farms, producing and selling organic products, is often dependent on the structure of their networks and organization of the supply chains. Networks play important role in information dissemination, particularly in the otherwise scarce information flow in rural areas. Informal networks are in most cases valuable source of social capital and information exchange. In order to identify the information diffusion channels for producing organic products among organic farmers, the aim of this paper is to understand network aspects of the relations and information channels among the actors in the supply chain for organic productions, by mapping information diffusion on horizontal level - farmer's relations with other farmers. Furthermore, it identifies and correlates the socio-economic factors that influence each farmers' ego network structure and size, or, how personal specifics reflect on the level of social capital seen through social networks and Social Network Analysis (SNA). A survey on 122 organic farms was carried out in 2018 in the Republic of North Macedonia. The data were processed using the SPSS software package for multivariate techniques, while the networks data was analyzed in UCINET. The findings confirm that farmers with similar production type are more likely to cooperate and share information among each other. Mapping social capital structure contributes in identify key individuals (social capital hubs), that can be activated for information dissemination and ultimately for active mobilization of organic production networks.

Key words: *egonetworks, information, organic farming, social networks, social capital*

THE ABILITY OF THE BOTTLED WATER SECTOR TO MEET THE NEEDS OF YOUNG CONSUMERS IN BOSNIA AND HERZEGOVINA

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ABSTRACT

Food companies in Bosnia and Herzegovina (B&H) are under a great deal of pressure due to the highly competitive market that came as a result of market liberalization. Market liberalization should create an innovative environment and stimulate the growth and development of the companies and improve the efficiency of resources utilization as well as strengthen existing, and create new, competing capabilities of the companies. Under such conditions, food companies in B&H have demonstrated and maintained certain competitive advantages at the domestic and international markets. Competitive advantages are mainly based on price strategies. In parallel, some researchers have shown that B&H food companies are working on improving and strengthening qualitative characteristics of the products by implementing modern business practices, such as total quality management and market orientation. Some authors conclude that the level of implementation of aforementioned practices is critically low and it is crucial for the improvement of competitiveness level. In media, special place and special potential are saved for the water and bottled water subsector in B&H.

A country rich in water resources, together with the growth of water and bottled water products consumption can make an important contribution to the food sector development, as well as to overall economic development of the country. Besides the aforementioned potential and opportunities, the huge trade deficit in this sector implies the necessity for further research in this area and shows the weakness of companies in the food sector, especially in the subsector of water and bottled water. In addition, the water and bottled water sector, more than two decades have the highest and most stable import contribution in food trade which also points out a weakness in this sector. Bearing in mind that this sector operates in a highly dynamic market that is characterized by rapid innovations based on consumer preferences, the analysis that focuses on this sector can serve as a basis for understanding the problem and giving recommendations for strengthening the capabilities of companies in this sector. In this regard, an important aspect is the analysis of customer behavior that is carried out with the aim of identifying the optimal ratio of quality and price that the buyer is willing to pay. Following the literature, availability, brand, marketing, price and packaging are used as factors tied to the buying of the bottled water in B&H. Since the "proclaimed" potential of the water and bottled water sector of B&H, these factors have been compared to imported bottled water products.

Following the aim of the research, simple research methodology was applied, which uses questionnaire with simple questions on a small scale sample to determine future research questions and create a "silhouette" of the bigger picture in the water and bottled water consumer preferences in B&H. Results of this pilot study could provide important input for future research, that can deal with questions such a methodological framework,

theoretical concepts, sample size, geographical distribution etc., and could also provide valuable information for companies as well as to policymakers. Primary data for this study were collected via an online questionnaire (LimeSurvey), specifically designed for the purpose of this study and based on previous research that dealt mostly with consumer behavior, attitude and motives. The questionnaire consists of questions (16 questions) regarding the socio-demographic characteristics, the frequency of buying, the importance of food product origin, and importance of availability, brand, marketing, price and packaging on buying habits. All questions regarding attitudes towards factors use a five-point Likert scale. The questionnaire was distributed during the December 2017 and January 2018, with the sample size of 97, covering the territory of Bosnia and Herzegovina. SPSS v22 was used to determine simple frequency tables and non-parametric correlations between the factors and the profile questions as well as the question determining do the consumer buy and consume bottled water.

Almost 63.0% of the sample is represented by female respondents, and most of the sample belongs to age groups from 18-25 years (66.0%) and 25-35 years (26.8%). Considering the social status, 67.0% are students and 16.5% employed, while minor percentages represent the pupils (6.2%), unemployed (9.3%) or retired (1.0%) people. Majority of the sample respondents represent the first three income groups, from 0-150€ (34.0%), from 150-300€ (16.5%), and from 300-600€ (29.9%). Almost 17.0% of the respondents chose not to answer the question regarding the monthly income. More than 90.0% of the respondents buying bottled water for drinking (90.7%) and the origin (domestic or imported) of the bottled products are of no importance to them, 75.3% of the respondents said the origin is not important to them while following 15.0% of the respondents said that the origin is mostly not important to them. As the factors come in place, availability is graded important (18.6%) and very important (55.7%) on more than 74.0% answers; packaging also comes important (19.6%) and very important (32.0%) to the majority of the respondents (51.6%); price comes as not important nor important (24.7%), important (19.6%) and very important (30.9%) for the majority of the sample respondents (75.2%); marketing comes as not important nor important (15.5%), important (23.7%) and important (27.8%) for the majority of the respondents (67.0%), and brand is not important nor important (23.7%), important (27.8%) and important (21.6%) for the majority of the sample respondents (73.1%). Correlation results show that marketing is significantly and positively correlated with the price ($r=0.3$) and packaging ($r=0.2$), thus showing that the market communication is crucial to include characteristic such as packaging details and price for the products of bottled water. Since the price and packaging are important to the majority of the respondents, it is possible to conclude that this is the reason for not giving importance to the origin of the bottled water. This can be explained also by the fact that most of the sample represents young generation, so-called Z generation with following characteristics, with high interest in new technologies, an insistence on ease of use, a desire to feel safe, with higher expectations, no brand loyalty and care more about the experience. It means, traditional marketing approaches that are very popular within this region, such as "buy domestic", national appealing on local identity are not the best one to get young population "on board" and create long-lasting consumer preference and commitment toward B&H beverage companies.

These results call for new innovative marketing approaches which will tackle national/ethnic/local identity to support the strengthening of young buyers' preferences toward B&H beverage sector. So, these results are seen as an excellent starting point for future research in the sector of the bottled water. Analyzing and identifying consumer behavior, motives, attitudes should become a priority for the sector of the bottled water, which is also the main conclusion of this research. It should provide necessary information to the B&H companies in the sector necessary to improve competitive position on the domestic and international market.

Keywords: consumer behavior, consumer profile, young consumer, beverage sector

CHALLENGES AND CHANGES IN EUROPEAN AGRICULTURE IN THE PRESENT INTERNATIONAL GEOPOLITICAL CONTEXT

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ABSTRACT

The current economic, social and political context in Europe and in the world is different from that in the last decades, when the process of the enlargement of the European Union (EU) was one of the main political targets of the politicians. The last country which joined EU was Croatia, in 2013, and since that year many other challenges have appeared and the politicians have concentrated on different objectives, other than a new enlargement, because, meanwhile, new circumstances, priorities, policies and strategies have emerged that will inevitably change much of what exists today. In our opinion, an important place in this new landscape is the agriculture and the agri-food sector, by its importance at EU and international level and because they are directly connected to our daily life and necessities. But, beyond the agriculture and the agri-food sector, there are other stronger interests and fields of "battles", with permanent influence on our life, direct or indirect, which can be seen or other that are not visible but affected us. Sometimes, they exceed our first perception. In this analysis, we identified a few of them, the most important in our opinion, which play a major role in the European and international negotiations, in the present geopolitical context. Behind them, there are groups of interests, strategies, policies that look for domination and money. In this complex world, the strategies and policies for agriculture and agri-food sector are trying to find their place. It is important to predict the next changes having in view the present situation and challenges.

In this regard, we will use information from official documents, newspapers, specialized magazines and different other publications in the field. We will analyse the text and present our conclusions regarding the influence of the actions described on the future of the agriculture and agri-food sector. In the end of our analysis, we will focus on the transformations in the EU policies, respectively Common Agricultural Policy (CAP), the influences on which it is subjected and the geopolitical pressures that EU and in particular Romania have to deal with considering the multitude of interests on the present political scene. A few scenarios about the future CAP will be presented.

Through the results we intend to show, we want to give our own picture of the future of the Romanian agri-food sector and the CAP of the EU, depending on the current context and the trends on the international political scene.

Key words: *agriculture, European Union, Romania, Common Agricultural Policy, geopolitical context*

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a full page of blank, lined paper. It features approximately 30 evenly spaced horizontal grey lines across its entire width, typical of notebook or school paper. There are no margins, text, or other markings present.



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