ANALYSIS OF MAIN CHARACTERISTICS AND UTILIZATION OF AGRICULTURAL LAND IN SERBIA AND BULGARIA

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Abstract

Land is the most important resource for the sustainable development of agriculture. Optimal use of land for the production of a sufficient amount of food, while simultaneously preserving biodiversity and its quality, is very important within the policy of preserving resources for future generations. Safety in food production represent one of the most important goals of sustainable development consist in actual the 2030 Agenda. We face numerous problems related to land. Degradation due to excessive use of modern agrotechnical means in food production, deforestation, erosion, excessive urbanization, floods are just some of the most common problems in land policy. An important problem is the abandonment of land use for agricultural production and its underutilization.

Serbia and Bulgaria have significant areas of agricultural land. The subject of research in this paper is the share of agricultural and arable land in the total land area in Serbia and Bulgaria. The focus of the analysis is the average size of farm land, the percentage of irrigated land, and the production structure on farms, as well as the contribution of agriculture to the realization of added value in the creation of GDP. Agriculture and the food industry play a significant role in creating GDP, employment and exports and reducing the foreign deficit. Bearing in mind that the Republic of Serbia is in the process of joining the European Union, it is necessary to reform the agricultural policy and adapt it to the Common Agricultural Policy. This is one of the most important and demanding reforms in the integration policy process. The entire European model of agricultural development is based on the concept of sustainable development. Agricultural land policy in this process is of great importance and the experiences of EU member countries are important.

The results of the research should indicate different experiences and recommendations that can be useful in agricultural land management policy. Land policy measures are aimed at creating optimal conditions for agricultural production while achieving the goals of all dimensions of sustainable development. Strategic approach in land management policy in Bulgaria provides guidelines and an example of good practice for taking measures and activities in the direction of its improvement in the Republic of Serbia. These results are also the basis for examining the causes of insufficient utilization of available natural resources and the balanced development that ensures the production of sufficient quantities of food and the preservation of the environment.

Keywords: agricultural land, arable land, sustainable development

JEL codes: *Q15, Q18, Q24*

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Introduction

Agriculture is a very important sector for the economic development of any country. Agriculture contributes to the economic development of the country, but its percentage share in the economic structure decreases as the country becomes more economically developed. That is why we can consider agriculture as a strategic economic activity.

The development of agriculture depends on natural conditions. Their impact on development depends on the level of development of a country's economy. If the level of development is higher, the influence of natural factors is lower, and vice versa. In the conditions of the energy and raw materials crisis, there is an increase in the importance of natural resources for the development of agriculture in the national economy. The use of resources as a factor in agricultural production is a particularly sensitive issue, bearing in mind that we must preserve these resources for future generations as well. Optimum use and conservation of resources, on the one hand, as well as the production of sufficient quantities of quality food, on the other hand, are imperative in modern conditions of development. The subject of research in this paper is agricultural land, as a condition, but also a factor of agricultural production in Serbia and Bulgaria. The paper aims to point out its basic characteristics, possibilities for better use, and, in particular, limitations for its preservation and use within agricultural activities and for future generations.

To include the economy of the Republic of Serbia in European integration, it is necessary to implement agricultural policy reforms by harmonizing them with the Common Agrarian Policy, which requires structural adjustments to the European model of agricultural development, which is based on the concept of sustainable development. The current policy and objectives within the land policy of Bulgaria can serve as a good example for directing strategic activities of land management policy in the Republic of Serbia.

Sustainable management of natural resources to develop multifunctional agriculture

Land policy is the basis of agrarian policy and is regulated by the Law on Agricultural Land (Zakon o poljoprivrednom zemljištu, 2006). The limited land as a natural resource requires responsible management of agricultural and land policy measures to preserve and rationally use it. Land policy measures are aimed at improving the property structure and creating optimal conditions for organizing agricultural production, which achieves the best production and economic effects. Land, as one of the main factors of agricultural production, has suffered great damage and losses in recent years through soil and air pollution, erosion, excessive urbanization, and floods. The use of pesticides and fertilizers are just some of the current problems facing agriculture. Therefore, the soil is very endangered and it is necessary to pay maximum attention to its protection. Soil protection is very important because the quality of agricultural products depends on the quality of the soil. Viana et. al (2022) state that agriculture is vital for food security and supporting the goals of sustainable development, especially SDG 2 – zero hunger (Avtar et al., 2020; DeClerck et al., 2016; FAO, 2017, Hurduzeu, 2022).

The problem of abandoned land exists. On the one hand, we have preserved biodiversity, while on the other hand, it is necessary to lead a policy of rational use of land for food production (Fayet et. al, 2022).

Varlamov et. al (2020) classified the factors that influence the assessment of the resource potential of agricultural land use into the following groups: environmental factors, production factors, and organizational-technological factors. They conclude that the assessment of the resource potential of agricultural land use is complex and it is necessary to simultaneously assess the sustainability of agricultural land use.

The sustainability of food and agriculture has great potential for revitalizing rural areas, ensuring inclusive growth for countries, and initiating positive changes throughout the 2030 Agenda (FAO, 2018, p. 5; Jovanović, Radukić, 2008). To the concept of sustainable development, there is a need to protect and improve renewable and non-renewable natural resources used for agricultural purposes.

The methods applied in agriculture until now will have to be changed to a large extent, to achieve the sustainability of the existing agricultural systems and enable the production of sufficient quantities of food in the future. Multifunctional production is a branch that strives to preserve natural resources and produce healthy, environmentally safe food, so its development represents a perspective that many countries strive for.

The idea of the multifunctionality of agriculture is characteristic of the most developed member states of the European Union, which have technologies, infrastructure, knowledge, and capital to the extent that allows them to take care of their non-market functions as well. Healthy and quality soil is a key component of sustainable agriculture. According to the Agriculture and Rural Development Strategy of the Republic of Serbia for the period 2014-2024, sustainable agriculture is the main orientation of the strategic action of the agricultural policy of the Republic of Serbia, which sees multifunctional agriculture as one of the most important economic activities.

Basic characteristics of agricultural land in Serbia and Bulgaria

In the Republic of Serbia, agriculture contributes about 12% of added value in the creation of GDP. In the structure of the GDP of the Republic of Serbia, service activities have a dominant and increasing share, while industry and agriculture have

a declining trend. Despite the slight downward trend, agriculture and the food industry play a significant role in creating GDP, employment, and exports and reducing the country's foreign trade deficit.

In Bulgaria, the agricultural sector participates in GVA with 5% in 2021. As in Serbia, services (72.1%) and industry (23.8%) have a dominant share in creating GVA. (Ministry of Agriculture, Republic of Bulgaria, 2023).

Regarding the economic structure of agriculture in the Republic of Serbia, small commodity production is the most represented (the average area of an agricultural farm is about 4.5 hectares of arable land compared to over 20 hectares in the European Union). A special problem of agriculture in the Republic of Serbia is the extensiveness of production on fragmented holdings and the fact that labor productivity and holding size in the agricultural sector are positively correlated. Mediumsized farms (from 1 to 5 hectares), of which as many as 76.8% in the Republic of Serbia are non-specialized, all-purpose farms, rent little land, employ little labor, have outdated machinery, have little economic strength, have little credit borrowing capacity, low level of use of irrigation systems, have an unfavorable age and educational structure, low yields and small marketable surpluses (Pejanović, 2010).

In Bulgaria, the tendency is to reduce the number of smaller plots and increase the number of large farms (from 10 to 50 ha). "The average farm size has significantly increased from 6.2 ha in 2007 to 10.1 ha in 2010 to 15.5 ha in 2013 and reached 20.6 ha in 2016. The consolidation of agricultural holdings is associated with a pronounced trend of reduction in the number of farms of size up to 1 ha." (European Commission, Final Report: Data and information on agricultural land market regulations across EU MS, 2021) The share of small farms (less than 1ha) relative to all farms from 70.5% in 2010 decreased to 59.3% in 2016.

"Trend of intensification and consolidation toward bigger agricultural holdings will be kept." (Yovchevska, et al. 2022) However, these changes, if they are not accompanied by adequate measures that support the interests of farmers on the one hand, and soil conservation on the other, will not be sustainable in the long term.

The Republic of Serbia has the lowest percentage of irrigated areas of European countries and those in the immediate vicinity. If we want to engage in serious agricultural production, whose products will be competitive with European ones, both in terms of volume and quality, then the construction of irrigation systems, as well as the commissioning of previously built systems, must be a priority in the coming period.

Both Serbia and Bulgaria record a low level of agricultural land irrigation. In Serbia, only 1.48% of agricultural land was irrigated in 2020. In 2016, 1.85% of agricultural irrigated land was recorded in Bulgaria. (World Bank, 2023, Agricultural irrigated land) Compared to other countries of the European Union, but also the Western Balkans, this is extremely unfavorable for the future growth of agricultural production.

Bearing in mind the structure of agricultural production in the Republic of Serbia, the available resources, and the achieved level of productivity, it is necessary for changes to take place in the direction of increasing productivity, stabilizing yields, and changing the production structure in plant production. The production of grain (wheat and corn), vegetables, and fruit has a large yield potential. According to the achieved results, the production of industrial plants in the Republic of Serbia is at the level of developed European countries and there is not much room for yield growth. On the other hand, there is potential for the growth of areas of industrial crops (oil crops, energy crops), which would significantly contribute to the increase in the value of agricultural production, but also to the much-needed change in its structure. In these activities, development must be directed towards new technologies and quality standards (Ministarstvo poljoprivrede i zaštite životne sredine, 2014).

Country /Year	2016	2017	2018	2019	2020
Serbia	1766713	1718273	1721439	1707375	1748963
Bulgaria	1816636	1729267	1817770	1927560	1956320

Table 1. Land under cereal production (hectares)

As in Serbia, a similar tendency can be observed in Bulgaria through *stable cereal production* (Table 1). Namely, after a slight decrease in the area under cereal production in 2017 compared to 2016, there is a growing tendency of land under cereal production until 2020. In Bulgaria, there is a tendency for faster growth of land under cereal production compared to Serbia.

The volume of agricultural production in the Republic of Serbia has fluctuated in the last ten years due to lower yields per hectare. Higher yields in the European Union by almost 60% indicate that the implementation of agro-economic measures in the production of the Republic of Serbia is not controlled and implemented. Standard agrotechnical measures are not applied, there is a low level of surface irrigation in plant production, inadequate genetic potential, and inadequate agro-economic support in production are used. Changes in the dynamics of agricultural production indicate cyclicality in plant production due to the influence of the weather factor, the absence of application of agrotechnical measures, and a modest incentive export policy.

The Republic of Serbia has favorable natural conditions for the development of agriculture. *Agricultural land areas* are a significant factor in the competitiveness of agriculture in the Republic of Serbia.

Serbia and Bulgaria have *large areas of agricultural land*. The area designated for agriculture in 2021 was 5,227,350 ha, which is about 47% of the territory of the

Source: World Bank (2023d)

country. The utilized agricultural area (UAA) is formed by arable land, permanent crops, nurseries, permanent grasslands, and kitchen gardens. In 2021 it amounted to 5,046,597 ha (without significant change compared to last year), which was 45.5% of the country's territory. (Ministry of Agriculture, Republic of Bulgaria, 2023)





Figure 2. Arable land (% of land area) Source: World Bank (2023c)

Of the total land area in Bulgaria, agricultural land makes up about 46%, while in Serbia 40% (Figure 1). In both countries, there is a slight increase in these areas, namely in Bulgaria from 46.3% in 2016 to 46.5% in 2020, while in Serbia the increase is from 39.5% in 2016 to 40.1% in 2020.



Figure 3. Arable land (hectares per person) Source: World Bank (2023c)

As for arable land, both Serbia and Bulgaria record a similar share of the total land area. In Bulgaria, arable land accounts for 32% of land area, while in Serbia, 29.77% of arable land in total land area is present (Figure 2). A higher percentage of arable land per person (0.5 ha per person) is recorded in Bulgaria compared to Serbia, where arable land per person is about 0.38 ha (Figure 3).

In the latest Strategy of Common Agricultural Policy Bulgaria aims to promote the sustainable development of the agricultural sector by supporting viable farm income and enhancing competitiveness. Special attention is also paid to attracting young and small farmers. The plan includes significant support for sustainable farming practices. The "significant contribution to the protection of natural resources, including by promoting investments that target them" stands out. (European Commission, Bulgaria's CAP Strategic Plan, 2023)

In terms of land management policy, the new strategic plan for Bulgaria, as well as other EU countries, strongly supports greening and guidelines that lead to sustainable development. "Interventions are aimed at reducing greenhouse gas emissions from agriculture, increasing organic carbon in soils, improving the quality of soil and water, producing energy from renewable resources, supporting low-intensity agricultural practices and sustainable management of forests." (European Commission, Bulgaria's CAP Strategic Plan, 2023) These should be recommendations for the future agrarian policy of Serbia, within which green growth, green practice, as well as the use of land in a sustainable way, should be imperative.

Conclusion

What emerges as a conclusion is that the state, with the help of the legal system and public administration, should first create favorable conditions for the rational use of available resources and thereby provide its contribution to increasing efficiency and developing competitive advantages. In addition to the line ministry, it is necessary to activate all other entities interested in raising competitiveness to a higher level.

Serbia and Bulgaria have significant areas of agricultural land. Serbia should follow the reform of Bulgaria, which is reflected in the consolidation of land and the increase of the land category of larger areas, especially those of 10-50 hectares. The construction of irrigation systems, as a necessity for stable plant production in modern conditions accompanied by uncertain climate changes, is imperative, both for Serbia and Bulgaria. Improving the competitiveness of agricultural production is a common goal that can be achieved through the rational use of resources, the application of standardized technology, the application of modern knowledge in production and processing, the increase of economy in business, the introduction of modern technologies in production and processing, with greater respect for economic, energy and environmental criteria.

There is a necessity, both for Serbia and Bulgaria, to simultaneously support the competitiveness of agricultural production, along with measures to support sustainable development and conservation of resources for future generations.

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