

RESEARCH TRENDS AND DIRECTIONS ON AGRICULTURAL HOLDINGS IN ROMANIA: A BOBLIOMETRIC APPROACH

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Abstract

The present study aims to identify and analyze the main trends and research directions in the agricultural economics sector, with a particular focus on agricultural holdings in Romania. To achieve this objective, a research methodology based on bibliometric analysis was used, an increasingly common tool used to map the structure and evolution of scientific research in a given field. The bibliometric analysis was carried out on a sample of 176 scientific publications indexed in the Web of Science (WoS) database, selected based on the topic criterion containing the terms “agricultural holding” and “Romania”. The results of the analysis highlighted a constant increase in the interest of the scientific community in Romania, but also at international level, in topics aimed at the sustainable development of agricultural holdings, especially in the context of their adaptation to the environmental, social and economic requirements imposed by European policies. A significant share of publications focuses on the analysis of the impact of the Common Agricultural Policy (CAP) on Romanian farmers, in particular on access to subsidies, economic efficiency and the process of alignment with European standards. Another topic frequently addressed in the specialized literature is the fragmentation of agricultural land, a major structural problem with historical roots, which continues to affect the competitiveness and performance of Romanian farms. Also, in recent years, there has been an increase in interest in the digitalization of agriculture, reflected in publications dealing with topics such as precision agriculture, the use of drones, IoT sensors and farm management systems based on artificial intelligence. These trends indicate a growing openness of researchers and research institutions towards innovation and technology, in response to contemporary challenges in the agricultural sector.

Keywords: agricultural holdings, Romania, bibliometric analysis, trends, agricultural policies.

The agricultural holding is an organizational form specific to the agricultural sector, consisting of all units intended for carrying out agricultural activities and under the management of a farmer (Dumitru *et al*, 2020).

Both national legislation and specialized literature define and classify agricultural holdings according to a series of relevant factors, such as physical size, object of activity, economic size, land ownership regime, human resources structure, production destination, as well as other legal and economic factors (Alecă *et al*, 2001).

In the context of agriculture in Romania, the predominant form of organization is represented by the family farm, which plays an essential role in the rural social structure, having the ability to capitalize on both available land and family labor. From an economic perspective, however, these holdings are not distinguished by a high level of profitability, since a large part of the agricultural production obtained is intended for self-consumption. This situation is particularly specific to very small farms, namely those with an area of

less than two hectares (Burja & Burja, 2010; Ionescu *et al*, 2021; Tachianu *et al*, 2022).

However, statistical data highlight the fact that the majority of agricultural farms in Romania fall into the category of those with areas between two and five hectares. Within this segment, the agricultural production obtained exceeds the household's own consumption needs, which leads farmers to market the surplus products, thus generating additional income (Popescu, 2010; Crecană & Crecană, 2019).

MATERIAL AND METHOD

The research comprehensively analyzes the studies in the existing specialized literature, paying special attention to studies that address the analysis of agricultural holdings in Romania.

The research method used was the analytical method and synthesis of information found in the specialized literature. The selected articles and studies were identified in specialized journals, WOS. The search was carried out using the keywords “agricultural holding” and “Romania”. With the help of the VOSviewer software, an

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analysis of the frequency of keywords used in the literature and of co-authorship networks was carried out, thus highlighting the main thematic clusters and the evolution of scientific interest in

the analyzed subject over time, as well as the degree of cooperation in the elaboration of scientific research.

RESULTS AND DISCUSSIONS

Starting with 1997 (1 publication) the concept of agricultural holding has been increasingly used in scientific works, which suggests an increase in interest for researchers in the agronomic field. The data in figure 1 illustrate a positive dynamic in terms of the number of documents indexed in WoS under the topic “agricultural holding” and “Romania”. Starting with 2008 (2 publications) the number of

publications has increased steadily, reaching 15 publications in 2016. This increase can be attributed to Romania’s accession to the European Union, which brought about a series of important changes in the structure of agricultural holdings. The maximum number of publications was recorded in 2018, namely 20 publications.

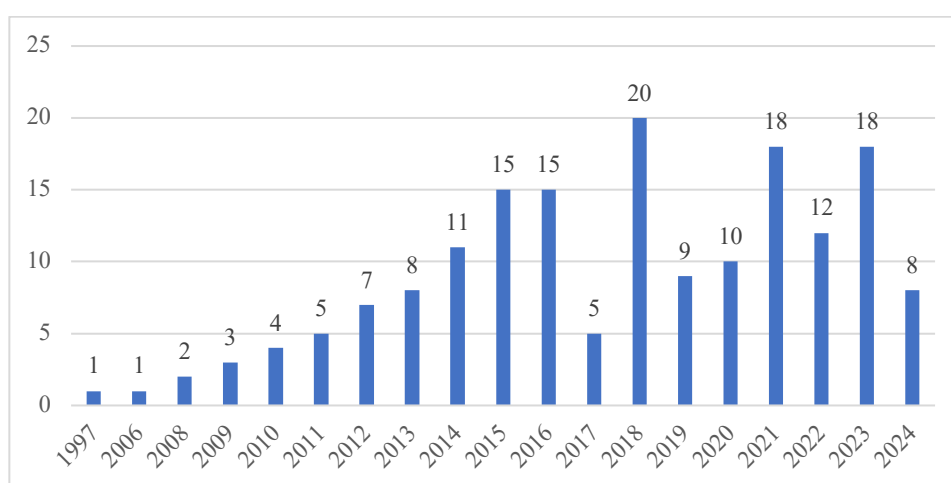


Figure 1 **Evolution of published works on the topic of "agricultural holding in Romania" in WoS (number of documents/year)**

Source: own data processing using the WoS database, accessed on 05.08.2025.

Regarding the WoS categories, most of the publications indexed in this database are part of the Agricultural Economics Policy category, namely 75 publications, representing approx. 43% of the total publications identified by the analyzed topic.

Also, the Economics category stands out for a substantial number of publications, more precisely 25 publications, representing approx. 14% of the total publications analyzed.

Table 1

Top five Web of Science Categories by number of publications

Web of Science Categories	Record Count	% of 176
Agricultural Economics Policy	75	42,61%
Economics	25	14,21%
Management	17	9,66%
Business	16	9,09%
Agronomy	10	5,68%

Source: WoS database, accessed on 05.08.2025.

Regarding the titles of publications in WoS, Scientific Papers Series Management Economic Engineering in Agriculture and Rural Development is the publication with the most registered documents, representing approx. 38% of the total

publications identified in WoS by topic, followed by International Multidisciplinary Scientific Geoconference Sgem with documents, representing 3.41% of the total.

Table 2

Top five Publication Titles s by number of publications		
Publication Titles	Record Count	% of 176
SCIENTIFIC PAPERS SERIES MANAGEMENT ECONOMIC ENGINEERING IN AGRICULTURE AND RURAL DEVELOPMENT	67	38,07%
INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC GEOCONFERENCE SGEM	6	3,41%
SUSTAINABILITY	5	2,84%
VISION 2020 SUSTAINABLE ECONOMIC DEVELOPMENT AND APPLICATION OF INNOVATION MANAGEMENT	5	2,84%
EKONOMIKA POLJOPRIVREDA ECONOMICS OF AGRICULTURE	4	2,27%

Source: WoS database, accessed on 05.08.2025.

By classifying the publications in WoS according to our topic, it is observed that most publications were written in Romania, namely 155 (88% of the total publications identified in the WoS database according to the selected topic). Poland and Serbia each recorded 6 publications

(totaling 6.82% of the total publications). The data may suggest that Romania has close ties with these countries when it comes to agricultural research (Table 3).

Table 3

Top five Countries by number of publications		
Countries/Regions	Record Count	% of 176
ROMANIA	155	88,07%
POLAND	6	3,41%
SERBIA	6	3,41%
FRANCE	5	2,84%
GERMANY	4	2,27%

Source: WoS database, accessed on 05.08.2025.

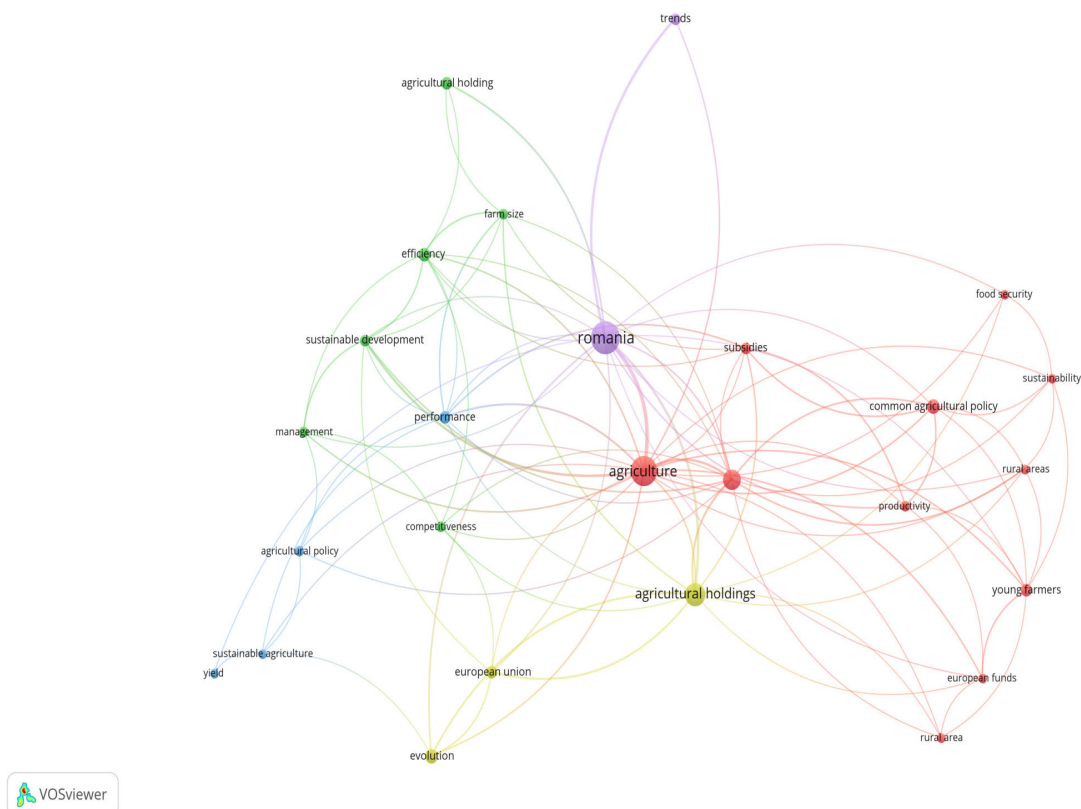


Figure 2 Correlation map of the terms "agricultural holding" and "Romania"

Source: own processing of data from the WoS database in VOSviewer, accessed on 05.08.2025

1. Romanian Agriculture in the Context of the Common Agricultural Policy (Red Cluster)

Romania's integration into the European Union in 2007 represented a high point for the national agricultural economy, especially in terms of adapting to the requirements of the CAP. Terms such as agriculture, common agricultural policy, European funds, food security, productivity, rural development, subsidies and young farmers are frequently used in the specialized literature analyzing the impact of accession on agricultural holdings (Ionita et al., 2018). Studies indicate that, in the post-accession period, considerable pressure was exerted on agricultural holdings in Romania to align with European standards, especially in sensitive regions such as Oltenia.

A major challenge is the excessive fragmentation of holdings: in 2020, 90% of farms were under 5 ha, and 54% even under 1 ha. Despite a slight increase in the average farm size (from 3.45 ha in 2010 to 4.42 ha in 2020), chronic undercapitalization continues to limit the performance of the agri-food sector (Colf et al., 2024).

Another crucial aspect is the difficulties encountered by small producers in effectively

capitalizing on agricultural production, especially in the vegetable sector. Research conducted by Ghibășeanu et al. (2022), through the application of a national questionnaire, reveals that the rejuvenation of the active population in agriculture is encouraged through support instruments within the Rural Development Programs, with promising results.

2. Farm size and economic efficiency (Green Cluster)

The comparative analysis of the size and efficiency of agricultural holdings, using terms such as: agricultural holding, competitiveness, efficiency, farm size, management and sustainable development, shows significant differences between the development regions of Romania. In the South-Muntenia and South-East regions, for example, holdings differ visibly in size and economic efficiency. In 2020, the average holding area in South-Muntenia was 4.4 ha, close to the national average, while in the South-East it was 6.7 ha (Tachianu et al., 2023).

Case studies, such as the one conducted in Dâmbovița County, highlight a persistent gap compared to the European Union average, where agricultural holdings are of the order of tens or even hundreds of hectares (Tachianu et al., 2022). These structural differences affect the

competitiveness of the sector, and research supports the need to reorganize the Romanian farm to increase the efficiency of the use of production factors (Burja and Burja, 2016).

3. Agricultural policies and sustainability (Blue Cluster)

The third conceptual cluster revolves around agricultural policies and sustainable performance (agricultural policy, performance, sustainable agriculture, yield). According to research by (Stanciu, 2017), Romania has the largest number of agricultural holdings in the EU, but this figure is influenced by the unclear methodology applied in defining agricultural units eligible for censuses, which makes real comparisons with other Member States difficult.

In the context of sustainable agriculture, small peasant households play an essential role through environmentally friendly agricultural practices. They use traditional methods, consume locally and apply technologies with low environmental impact, which makes them relevant for sustainable agricultural models promoted within the EU (Marunelu, 2020).

4. Structural evolution of Romanian agriculture (Yellow Cluster)

The terms agricultural holdings, European Union and evolution reflect researchers' concern for the structural changes generated by Romania's accession to the EU. According to Bularca and (Toma, 2018), between 2002 and 2016, the total number of farms decreased, while large farms (0.5% of the total) came to manage over 50% of the utilized agricultural area.

An important aspect is represented by investments in the modernization of agricultural holdings, supported by European funds, which are becoming increasingly dependent on the size of the farm and its capacity to attract direct payments. The study conducted by (Curea *et al*, 2022) reveals that access to funded projects depends not only on the number of farms and their size, but also on regional economic needs, analyzed based on Eurostat and FADN data.

5. General trends in Romanian agriculture (Purple Cluster)

The least represented cluster, composed of the terms Romania and trends, reflects the interest in outlining the general directions of evolution of Romanian agriculture. This segment can cover topics such as post-accession transformations, the digitalization of agriculture, the ecological transition or adaptation to climate change. Although this cluster is less present in the analyzed literature, it is essential for understanding macroeconomic trends and the strategic

perspective on Romanian agriculture in the context of European and global policies.

CONCLUSIONS

The analysis of publications in the WoS database highlighted an increased interest in the topic of "agricultural holding" and "Romania". The research themes identified were diverse, but all focused around the same concept: "agricultural holding". The results of these researches showed that excessive fragmentation of holdings, chronic undercapitalization, and difficulties in valorizing production are recurring problems in the studies analyzed. However, notable progress is noted in consolidating farms, encouraging young farmers and absorbing European funds. Thus, we can consider that the sustainable development of Romanian agriculture requires an integrated approach, in which the economic dimension, environmental sustainability and adaptation to the requirements of the CAP must work synergistically.

The correlation of the keywords highlighted strong connections of the keyword „agricultural holding” with other words such as: „agriculture”, „Romania”, „European Union”, „European funds”, „farm size”, „competitiveness”, and „performance”, all of these words being found in the vocabulary used in the agriculture and rural development sector. The study of the specialized literature showed how these words are connected to each other. Thus, for a sustainable development of agricultural holdings in Romania, there is an urgent need for political and implicit economic support. The European Union supports the sustainable development of Romanian agricultural holdings through a series of policies, financing and regulations aimed at the balance between economic development, environmental protection and social cohesion in the agricultural sector, the CAP being the main instrument through which the EU supports the Member States.

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