

## STUDIES ON THE IMPORTANCE OF AGRICULTURE IN THE ROMANIAN ECONOMY

MĂNESCU CAMELIA<sup>1</sup>, MĂNESCU ALINA<sup>2</sup>, VASS HUNOR<sup>1\*</sup>, SICOE-MURG OANA<sup>1</sup>,  
ANA-MARIANA DINCU<sup>1</sup>, MATEOC-SÎRB NICOLETA<sup>1</sup>

<sup>1</sup>*Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Faculty of Management and Rural Tourism*

<sup>2</sup>*West University of Timișoara, Faculty of Economics and Business Administration*

\*Corresponding author's e-mail: hunor.vass@usab-tm.ro

***Abstract:** Agriculture was and remains the mainstay of human existence, representing the backbone of the Romanian rural economy. The authors of the paper propose an analysis of the main factors involved in the development of agriculture in Romania: the share of agriculture in the Gross Domestic Product (GDP), the land base, the agricultural labour force, the development of agricultural holdings, the structure of agricultural production, the level of agricultural machinery and equipment and the use of chemical fertilisers in agriculture. The methodology used in the research consists of collecting statistical data, processing them, interpreting them graphically, and analysing, and synthesising information on the evolution of agriculture from the literature in the field. At the end of the paper, the authors highlight the primary function of agriculture in ensuring the population's food security, thus underlining the need for farm consolidation, modernisation of technologies, and general improvement of farmers' activity.*

**Key words:** agriculture, evolution, economy

### INTRODUCTION

**Agriculture holds an important place in our country's economy and politics, representing one of the most important resources for development.** Thus, agriculture is traditionally an important branch of the Romanian economy, both in terms of the size of the agricultural area (14.7 million hectares) and the area covered by forests and other wooded lands (6.7 million hectares) and especially in terms of the share of the population employed in agriculture (20.6% in 2019) in the total population [7].

Agriculture plays an important role in the structure of the national economy, both as a contributor to gross domestic product and as a direct source of employment [1]. In agriculture, as in other branches of material production, the normal course of production processes requires the direct presence of material resources, i.e. the means of production in the form of labour and work equipment, and, human resources, the labour force needed both to carry out agricultural work and to provide technical guidance, organisation, management and administration of all the resources available on farms[2].

It should be emphasised that the economic development of agriculture as a whole, and farms, in particular, is closely interdependent with each of the resource categories of agricultural production, taken separately, with the optimal range of efficiency depending on the economic rationality of the provision, organisation and use of resources. Without underestimating the role and importance of all resources, it should be pointed out that, of all the resources and factors of agricultural production, human resources, seen both quantitatively and especially qualitatively, are the most dynamic and have a decisive influence on the results of productive activity in agriculture, irrespective of the type of economic system used [5]. Decades of rapid industrialisation of the economy have been accompanied by accelerated rates of numerical decline in the active population employed in agriculture, an extremely complex economic and social phenomenon with particular implications for the essential correlations that have become established between the main parameters of economic performance in agriculture as a whole, but especially in territorial

terms - labour productivity and the economic use of technical, material and financial resources [6].

Regarding the quantitative and structural-qualitative evolution of labour resources in Romania's agriculture, it is worth making the preliminary observation that, in the long term, the agricultural labour force is in line with the general trend in countries with economies in the process of modernisation, i.e. absolute and relative reduction. The phenomenon of numerical reduction of the labour resources employed in agriculture began practically after the cooperative movement and became more intense, particularly after 1965. From 1981-to 1989, the stock of agricultural labour remained relatively constant, but from 1990 onwards there was a trend - the reverse of the normal trend - towards an absolute and relative increase in the active population employed in agriculture. The share of the population employed in agriculture in Romania is still much higher than the EU average [3,4].

Romania's agriculture has the following characteristics: inadequate farm structure, poor machinery and equipment and low labour productivity [8], aspects that are highlighted in this paper by the authors.

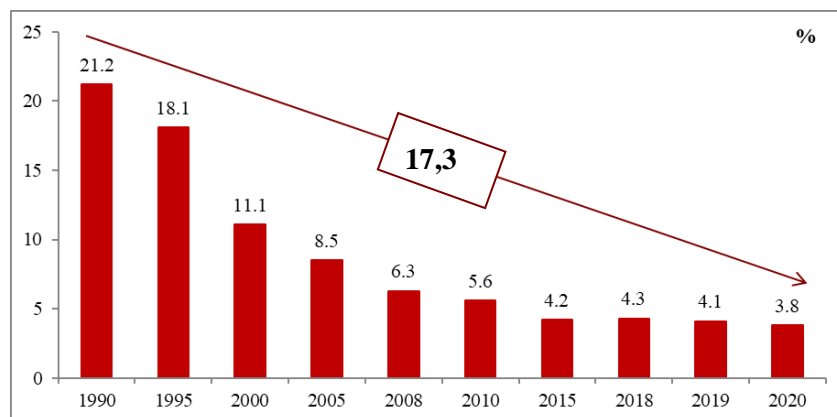
## MATERIALS AND METHODS

The methodology used in the research consists of collecting statistical data, processing them, interpreting them graphically, and analysing and synthesising information on the evolution of agriculture from the literature in the field.

## RESEARCH RESULTS

### 1. SHARE OF AGRICULTURE IN GROSS DOMESTIC PRODUCT

The share of agriculture in Romania's GDP has declined considerably since 1990 from 21.2% to 4.2% in 2015, and by 2020 it will be 3.9%. This decrease is mainly due to the growth of the other economic branches, namely industry and services.

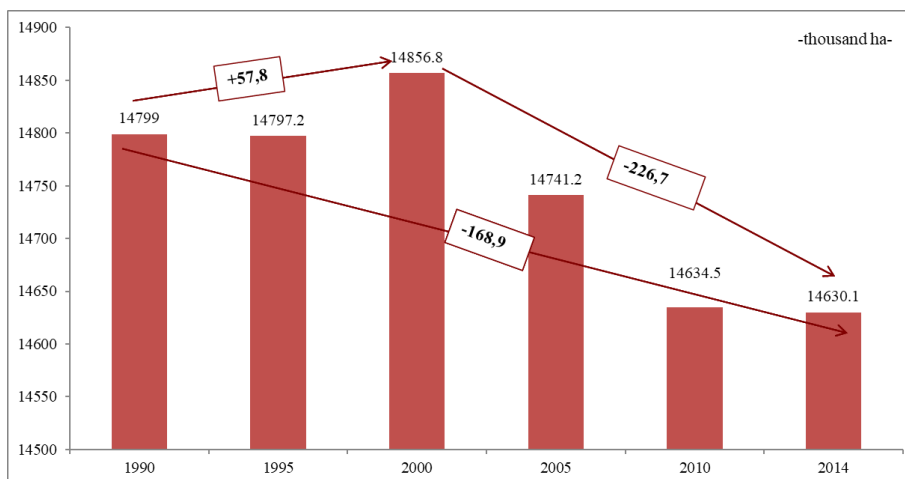


**Figure 1. Evolution of the share of agriculture in GDP formation, 1990-2020**

Source: Own processing after Statistical Yearbook of Romania 2020 Time series and \*Romania in figures 2021, Statistical Brief; [11,13]

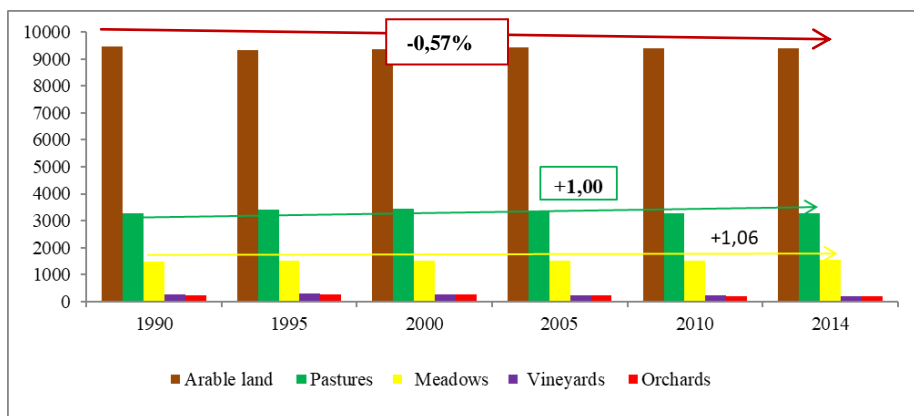
### 2. EVOLUTION OF ROMANIA'S LAND FUND

**Romania's agricultural area** did not change substantially during the period analysed, decreasing by 168.9 thousand hectares between 1990 and 2014 (Figure 1).



**Figure 2. Evolution of Romania's agricultural area, 1990-2014**

Source: own processing after Statistical Yearbook of Romania collection 1990- 2016, INS Press Release - Agriculture March 2022 and INS-Tempo online, agriculture, 2022; [10,14,15]



**Figure 3. Evolution of Romania's agricultural area, by category of use, 1990-2014**

Source: own processing after Statistical Yearbook of Romania collection 1990- 2016, INS Press Release - Agriculture March 2022 and INS-Tempo online, agriculture, 2022; [10,14,15]

Analysing its evolution by categories of agricultural use, we can see a slight decrease in arable land by 0.57%, an increase in pastures by 1% and in meadows by 1.6%. The area under vineyards and orchards decreased from 277.0 thousand ha in 1990 to 209.4 thousand ha in 2014, by 24.4%. As regards the area occupied by orchards and fruit nurseries, the percentage decrease in area is 14.76%.

Romania, according to a classification used in specialized literature, according to the indicator agricultural and arable land area per inhabitant [8], falls into the category of countries with rich land resources, agricultural and arable land area per inhabitant being over 0.70 and 0.47 ha/inhabitant, respectively, in 2014.

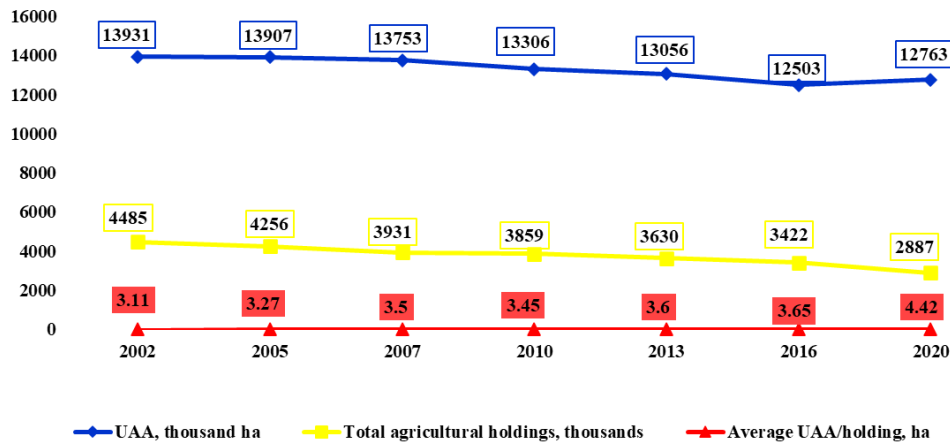
### 3. STRUCTURE OF AGRICULTURAL HOLDINGS IN ROMANIA

The current situation of Romanian agriculture is characterised by multiple economic and social problems, excessive land fragmentation and the existence of many economically unviable farms.

The structural changes that have taken place in Romanian agriculture since 1990 have resulted in the transfer of agricultural land to private ownership and the formation of small and medium-sized farms. The agrarian reform has led to the emergence of new types

of farms: family farms (predominant subsistence), and commercial farms, which are in the process of formation and consolidation.

The evolution of the number of agricultural holdings in Romania over the period 2002-2020 is shown in Figure 4, which shows a reduction in the number of agricultural holdings from 4.485 million in 2002 to 2.887 million in 2020.

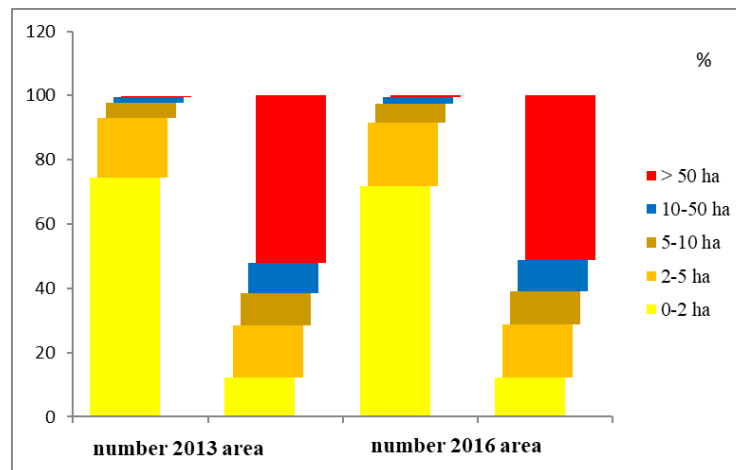


**Figure 4. Number of agricultural holdings and utilised agricultural area, 2002-2020**

Source: Own processing after Statistical Yearbook of Romania, 2020, Time series, NSI Press release - Agriculture March 2022; [ 11,15]

Note: UAA-utilised agricultural area

If we analyze the average area of farms in Romania, we see that it has increased from 3.11 hectares in 2002 to 4.42 hectares in 2020, which shows that the process of concentration is reflected by the reduction in the number of farms and the increase in the average area in our country is still very slow (Figure 4).



**Figure 5. Structure of agricultural holdings in Romania by size class**

Source: Own processing according to the 2013 and 2016 Agricultural Structural Survey; [9]

An analysis of Figure 5 shows that most farms in Romania are small farms, of which almost 75% of farms have less than 2 hectares, and the share of farms under 10 hectares is 97.9% of the total number and 39.12% of the total utilised agricultural area. At the other end of the scale, farms larger than 50 hectares represent only 0.5% of the total number but *account for 51.52% of the agricultural area. The existence of a very large number of small farms alongside very large farms reveals the structural imbalance influencing agriculture in our country and its competitiveness. In contrast to other*

*European countries, the segment of medium-sized farms, between 10 and 100 hectares, is relatively poorly represented in Romania [ 12,16,17].*

#### 4. STRUCTURE OF AGRICULTURAL PRODUCTION

The ratio of crop production to livestock production, or the share of each of the two sectors of agricultural production in the structure of total production, is a very important indicator of the level of development of the agricultural sector, an indicator of the degree of intensity of agricultural production.

Due to the lack of an overall strategy and concrete, coherent and well-structured sectoral programmes on ways and means of development in the short, medium and long term, after 2000 agricultural production has fallen alarmingly, and hence its value, with serious economic, financial and social consequences for agricultural and food industry producers (Table 1).

**Table 1.**

#### Agricultural production of agricultural goods and services

Nr. Crt.	Year	Total	Vegetal		Animal		Agricultural services	
			lei	%	lei	%	lei	%
1	2000	160712839	99105602	61.7	59621073	37.1	1986164	1.2
2	2002	315848560	180841729	57.3	1313903227	41.6	3616504	1.1
3	2005	553141357	380972144	68.9	168251381	30.4	3917832	0.7
4	2007	47699916	28723475	60.2	18291624	38.3	684817	1.5
5	2010	<b>64452571</b>	43488480	67.5	20406840	31.6	557251	0.9
6	2013	<b>78464416</b>	53843812	68.6	23876547	30.4	744057	0.9
7	2016	<b>69348614</b>	45155180	65.1	23293590	33.6	899844	1.3
8	2019	<b>89989063</b>	62967346	70.0	25228818	28.0	1792899	2.0

Source: Own processing after Statistical Yearbook of Romania, 2020, Time series[11]

Overall, agricultural production has not improved much structurally, mainly due to the very small share of the livestock sector.

#### 5. WORKFORCE

In Romania, the share of the active population employed in agriculture was fairly stable until 1990, with about 3 million people employed in this sector. Structural economic reforms and the dismantling of the Agricultural Production Cooperatives in the early 1990s led to a drastic increase in the workforce employed in agriculture.

The rural labour force is mainly employed in the agricultural sector, which is one of the major constraints on the country's economic development.

The share of the population employed in agriculture out of the total employed population has increased significantly from 28.2% in 1990 to 41.4% in 2000. This increase in the population employed in agriculture has been driven not so much by the needs of agriculture as by the redundancies in the other branches of the economy, namely industry and services. The rise in unemployment in urban areas has forced part of the population to seek employment opportunities in rural areas or simply to switch from industrial activities to subsistence farming. Romanian agriculture, after 1990, played the role of an occupational 'buffer' when the performance of the rest of the economy was poor. (Table 2)

Table 2.

**Evolution of the employed population in Romania, 1990-2019**

No. Crt.	Activity	1990	1995	2000	2002	2005	2007	2010	2013	2016	2019
1	Total (thousand persons)	10840	9493	8629	8329	8390	8726	8371	8531	8318	8493
2	Agriculture, hunting and forestry	3055	3265	3570	3011	2674	2462	2439	2380	1727	1747
	(Thousand persons)										
	%	28.2	34.4	41.4	36.15	31.90	28.20	29.10	27.90	20.8	20.6

Source: Own processing after Statistical Yearbook of Romania, 2020 Time series, Tempo online, <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> [11,14]

After 2000, the share of the population employed in agriculture in the total employed population started to decrease slightly, reaching 20.6% in 2019.

**6. DEGREE OF EQUIPMENT WITH AGRICULTURAL MACHINERY AND EQUIPMENT**

After 1990, there was a lack of capital in agriculture and especially in the case of individual households and subsistence farms and poorly supplied with capital.

Technical and scientific progress has created favourable conditions for developing and modernising the technical base of agriculture, but real access to this equipment is unequal and to the disadvantage of small farmers, who do not have the necessary investment resources.

Table 3.

**Development and structure of the tractor and agricultural machinery fleet**

No. Crt.	Specify	1990	1995	2000	2007	2010	2013	2016	2019
1	Arable area, thousand ha	9450.0	9337.1	9381.1	9423.3	9404.0	9389.3	-	-
2	Physical agricultural tractors	127065	163370	160053	174003	180433	191301	207901	221677
3	Tractor ploughs	73159	107253	123192	139782	142671	152031	168617	163547
4	Mechanical cultivators	27339	23376	26212	27262	27795	29565	30632	28545
5	Mechanical seed drills	35778	50395	57709	67674	69337	74805	81255	74221
6	Mechanically driven spraying and dusting machines	14991	11788	7371	5876	5680	5293	5327	5990
7	Self-propelled combine harvesters	35813	38121	26783	24656	25285	26454	26923	27632
8	Trailed forage harvesters	5569	4135	1655	761	797	826	985	1018
9	Self-propelled forage harvesters	4981	3764	1780	1269	1233	1221	1327	1356
10	Straw and hay balers	21706	16346	6753	5399	7181	10225	13840	15483
11	Arable area returning on a physical tractor - ha	74.37	57.15	58.61	54.0	52.11	49.08	-	-

Source: Own processing after Statistical Yearbook of Romania, 2020 Time series [11]

However, between 1990 and 2019 there was an increase in the number of tractors, tractor ploughs and mechanical seed drills. The number of mechanical cultivators has remained relatively constant. In contrast, the number of self-propelled combine harvesters for maize harvesting and towed combine harvesters for fodder harvesting decreased significantly during the period under review, with an increasing trend observed since 2016 (Table 3). A simple calculation shows that in 2007, about 54.0% ha of arable land per physical tractor was used, an area that has been progressively decreasing since 1990, when it was 74.37 ha per physical tractor. We consider that, although the arable area/tractor has decreased considerably - to 49.08 ha per physical tractor in 2013, this area is still far from the level of countries with efficient agriculture.

**7. USE OF CHEMICAL FERTILISERS**

A particular impact on yields per hectare is the use of fertilisers and other chemicals. In Romania, since 1990, with small annual variations, there has been a trend towards a reduction in chemical fertiliser consumption. If until 1990, 1200 - 1300 thousand tons of chemical fertilizers active substance were used in agriculture, since 1991 the

quantities used have drastically decreased, varying between 300 - 500 thousand tons of active substance, with a higher increase in 2019, namely 750 thousand tons (Table 4).

**Table 4.**  
**Evolution of fertiliser use in agriculture by category (1990 - 2019)**

- thousand tonnes -

No. Crt.	Specify	Chemical fertilizers (active substance)				Chemical fertilizers (active substance)
		Agriculture - total	of which:			Agriculture - total
			Nitrogenous	Phosphatic	Potassic	
1	1990	1103	656.1	313.1	133.9	24791
2	1995	470	306	149	15	17423
3	2000	342	239	88	15	15813
4	2002	326	239	73	14	15746
5	2005	461	299	138	24	16570
6	2007	379	260	101	18	13438
7	2010	481	306	123	52	15232
8	2013	492	344	114	34	13580
9	2016	514	344	126	44	14927
10	2019	750	456	201	93	15323

Source: Own processing after Statistical Yearbook of Romania, 2020 Time series

The total consumption of chemical fertilizers in Romania, even if it is slightly increasing concerning the area, remains low, greatly influencing the yields obtained and the yields per hectare. In this respect, it should be noted that the **moderate use of chemical fertilisers** makes it easier for those who opt for this type of farming to convert their land to organic farming.

## CONCLUSIONS

- *Although the share of agriculture in GDP is decreasing*, from 21.2% in 1990 to 3.9% in 2020, it does not mean that agriculture in Romania is more productive than agriculture in other EU countries, where the average is 1.3% in 2015. In EU countries agriculture is more productive than in Romania, but it has a lower share of Gross Value Added in GDP because industry and especially services are highly developed and have a high contribution to GDP. In Romania industry and especially services are not sufficiently developed, which results in this high share of agriculture in the economy.

- Romania falls into the category of countries with rich land resources, with agricultural and arable land per inhabitant of 0.70 and 0.47 ha/inhabitant, respectively, in 2014, resources which, unfortunately, are not exploited to their true value.

- **Increasing the role of capital in agriculture is essential in the current period to achieve optimal production structures and economic exploitation of resources.** The lack of a modern, European-level fleet of tractors, agricultural machinery and equipment is a major obstacle to the development of farms in Romania. Romanian agriculture will not be able to reach the average European level in terms of yield per hectare or theoretical soil yield without massive investment in the latest generation of tractors, machinery and agricultural equipment.

- The issue of farm size corresponds to the requirements of scientific and technical progress and is an issue that has been and continues to be of concern to developed countries. The trend has been and continues to be, towards increasing farm size. In Romania, *the existence of a very large number of small farms in parallel with very large farms reveals the structural imbalance influencing agriculture in our country and its competitiveness. In contrast to other European countries, the segment of medium-sized farms, between 10 and 100 hectares, is relatively poorly represented in Romania.* At

present, European Union programmes are trying to alleviate this situation by allocating funds mainly to small and medium-sized holdings, those with unfavourable conditions, limiting or even stopping certain allocations for very large holdings, stimulating young farmers, setting up new medium-sized holdings, organising small farmers into production marketing structures.

- Improving this aspect and the generally balanced development of agricultural holdings requires the involvement of the state through its specialised bodies, by supporting farmers, providing advice and assistance in the work of small and medium-sized holdings, and organising their cooperation in the valorisation of production and other necessary measures.

- Consequently, **Romania's agriculture needs to be helped and supported both financially and through the adoption of viable agricultural policy decisions that ensure increased performance.**

### REFERENCES

- [1]. **ALEXANDRI CECILIA, DAVIDOVICI I., GAVRILESCU D.**, 2003, *Tratat de economia agriculturii*, Ed. Expert, București
- [2]. **BOLD I., CRĂCIUN A.**, 1994, *Exploatarea agricolă: organizare, dezvoltare, exploatare*, Timișoara, Editura Mirton
- [3]. **DUMITRU, D. și alții**, 1997, *Agricultura României, Tendințe pe termen mediu și lung*, Editura Expert, București
- [4]. **MATEOC-SÎRB NICOLETA, UNGUREANU G.**, 2010, *Dezvoltarea regională și rurală. Evoluții și tendințe*, Editura Mirton, Timișoara
- [5]. **OTIMAN, P.I.**, 1999, *Economie rurală*, Editura Agroprint, Timișoara
- [6]. **OTIMAN, P.I.**, 2000, *Restructurarea agriculturii și dezvoltarea rurală a României în vederea aderării la Uniunea Europeană – un punct de vedere*, Editura Agroprint, Timișoara
- [7]. **OTIMAN P.I., MATEOC-SÎRB, MĂNESCU CAMELIA**, 2013, *Economie rurală*, Editura Mirton, Timișoara
- [8]. **POCOL CRISTINA BIANCA**, 2013, *Economie rurală, Identitate și actualitate*, Editura Academic Pres, Cluj-Napoca
- [9]. \*\*\* *Ancheta Structurală în Agricultură 2007, 2013, 2016*
- [10]. \*\*\* *Anuarul Statistic al României, INS, edițiile 1990-2016*
- [11]. \*\*\* *Anuarul Statistic al României, 2020 INS, Serii de timp*
- [12]. \*\*\* *Ferme și terenuri agricole în Uniunea Europeană – statistici*, [https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Archive:Ferme\\_%C8%99i\\_terenuri\\_agricole\\_%C3%AEn\\_Uniunea\\_European%C4%83\\_-\\_statistici&oldid=446444](https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Archive:Ferme_%C8%99i_terenuri_agricole_%C3%AEn_Uniunea_European%C4%83_-_statistici&oldid=446444)
- [13]. *România în cifre 2021, Breviar statistic*
- [14]. *INS-Tempo online, 2022*
- [15]. *INS Comunicat de presa – Agricultură martie 2022*
- [16]. <http://www.maap.ro> - Ministerul Agriculturii și Dezvoltării Rurale
- [17]. <http://www.fonduri-structurale-europene.ro> – Sprijinirea fermelor agricole