

STUDY ON THE EVOLUTION OF AGRICULTURAL CROP PRODUCTION IN CARAȘ-SEVERIN COUNTY

Ileana MOROCILĂ¹, Ana-Mariana DINCU^{2*}

¹University of Life Sciences “King Michael I” from Timisoara, Faculty of Agriculture, 300645, Aradului Street 119, Timișoara, Romania

²University of Life Sciences “King Michael I” from Timisoara, Faculty of Management and Rural Tourism, 300645, Aradului Street 119, Timișoara, Romania

*Corresponding author: anamariadincu@usvt-tm.ro

Abstract. Agriculture is very different from other economic activities, due to the fact that, on the one hand, agricultural activity is conditioned by the biological evolution of plants and animals, and on the other hand, it provides food for the population. Through this paper, the authors provide a clearer picture of the evolution of vegetable agricultural production in Caraș-Severin county. With an area of 386,778 ha, Caraș-Severin County owns 3.6% of the country's surface, ranking third among the country's counties. Although Caraș-Severin county is the third largest in the country, in terms of agricultural area (386,778 ha), it only ranks 13th, due to the predominantly mountainous terrain. Of all the existing agricultural lands in the studied area, about 82% are located on sloping lands, due to the relief which is mostly mountainous, not being suitable for large agricultural crops. Thanks to the involvement of local authorities and the data obtained from the National Institute of Statistics and other bibliographic sources, we were able to observe and compare the evolution, over time, of the vegetable agricultural production in Caraș-Severin County. The centralization, processing and interpretation of the data also allowed the formulation of the main conclusions with reference to the vegetable agricultural potential of the studied area.

Keywords: vegetable agricultural production, agriculture, area, Caraș-Severin county, agronomy

INTRODUCTION

Agriculture is an activity which differs greatly from other economic activities because, on the one hand, agricultural activity is conditioned by the biological development of plants and animals and, on the other hand, it provides food for the population. (BRAD I., ET AL., 2014, DINCU A. M, ET. AL., 2014, SÎRBULESCU C., ET. AL., 2016)

Therefore, we can say that agriculture plays an important role in the economy of the area studied, due to the land it owns and which is the main source of natural resources, therefore agriculture is and will remain the most valuable branch of production (MIHUȚ, C., ET AL., 2012; 2022, 2023; ȘMULEAC L., TULBURE C., 2021).

The aim of this paper is to provide a clearer picture of the development of agricultural crop production in Caras-Severin county (SÎRBULESCU CLAUDIA ET AL., 2016).

Caras-Severin county is located in the Banat region of Romania, with the city of Reșița as its capital. Located in the south-western part of Romania, Caras-Severin County has an area of 386,778 ha and accounts for 3.6% of the country's surface area, ranking third in terms of size among the country's counties. (Monograph of Caraș-Severin County).

It borders Timiș county to the north-west, Hunedoara county to the north-east, Gorj county to the east, Mehedinți county to the south-east, the Republic of Serbia to the west and the Danube river to the south-west and comprises 2 municipalities, 6 towns, 69 communes and a total of 287 villages. (https://ro.wikipedia.org/wiki/Jude%C8%9Bul_Cara%C8%99-Severin, <https://www.7-zile.com/sapte-luni-de-agricultura-in-caras-severin/>).



Figure 1. Map of Caraș Severin county

Source: <http://www.hartaromanieionline.ro/harta-judet-Caras-Severin/>

Geographically speaking, all three classical mountain ranges are found in Caras-Severin county, but mountainous relief predominates, occupying 65% of the territory, being represented by the Banat Mountains, the Tarcu Mountains, the Godeanu Mountains and the Cerna Mountains. It can therefore be considered a mountain county.

MATERIAL AND METHODS

The research in this paper is located in the Western Region, specifically in Caras-Severin County. The materials used for the paper were provided by local authorities, the National Institute of Statistics and various bibliographic sources. With the help of the data obtained, we were able to observe and compare the evolution over time of agricultural crop production in Caras-Severin county.

RESULTS AND DISCUSSIONS

In the rural environment, the agricultural sector has developed significantly in recent years, thanks to the attraction of European funds. In addition to agritourism and rural tourism, agriculture is the only alternative income for the inhabitants, as industry is poorly developed in the area studied.

Therefore, in the following we will analyse the evolution of the land by land use in the period 2005-2020.

Caras-Severin county has an agricultural area of 851,976 hectares, and the arable area in 2020 was 386,778 hectares.

A careful analysis of Table 1 shows that the largest share is held by pastureland with a percentage of 43%, followed by arable land (34%), meadows (20%), and the last place is occupied by vineyards and orchards.

Table 1.

The evolution of the land fund by categories of use, 2005-2020

Land use	2005	2010	2014	2020
Total	851,976	851,976	851,976	851,976
Agriculture	398,083	396,999	396,915	386,778
Arable	127,313	129,661	129,628	129,472
Peas	183,466	179,414	179,349	167,831
Meadows	74,796	76,393	76,392	77,462
Vineyards and nurseries	766	772	772	788
Orchards and fruit nurseries	11,742	10,759	10,774	11,174

Source: <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>

Pastures and meadows are used for grazing animals, but here too there are large reserves, given the low stocking rates per unit area caused by the decline in livestock numbers. As for the existing orchards in the county, out of the total of 11,174 hectares, only 4,384 hectares are orchards in bearing. The remaining area represents young orchards not in fruit, newly planted orchards and land in preparation for fruit plantations, but these too are poorly productive, most being aged and untended, resulting in diminished fruit yields. (<https://www.radioresita.ro/actualitate/agricultura-judetului-caras-severin-lasa-de-dorit>).

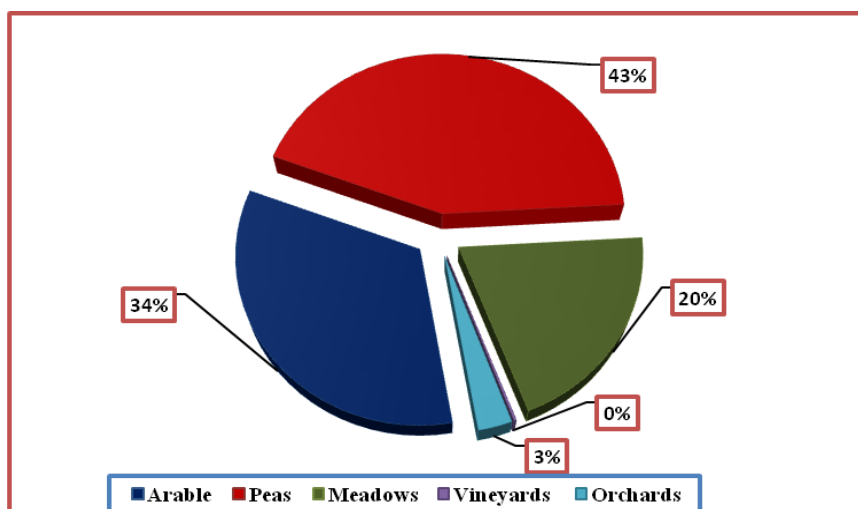


Figure 1. Structure of the agricultural area of Caras-Severin county in 2020

In addition to arable land, the agricultural area of Caras-Severin county also contains vineyards and vine nurseries with an area of 788 hectares, of which 634 hectares are vineyards under vines and the rest are young vineyards not under vines and land in preparation for vineyards. (<https://resita.ro/terenuri-agricole-lasate-parloaga-jumatate-din-suprafata-arabila-a-judetului-caras-severin-a-ramas-nelucrata-in-2021/>)

As for the surface of the forest fund of Caras-Severin county, it is 411,276 ha, of which 402,600 ha are covered with forests. The coniferous forests occupy 47,200 ha and the deciduous forests 355,400 ha.

The agricultural production of Caras-Severin county, during the period under analysis, has been on an upward trend, as can be seen in the figure below.

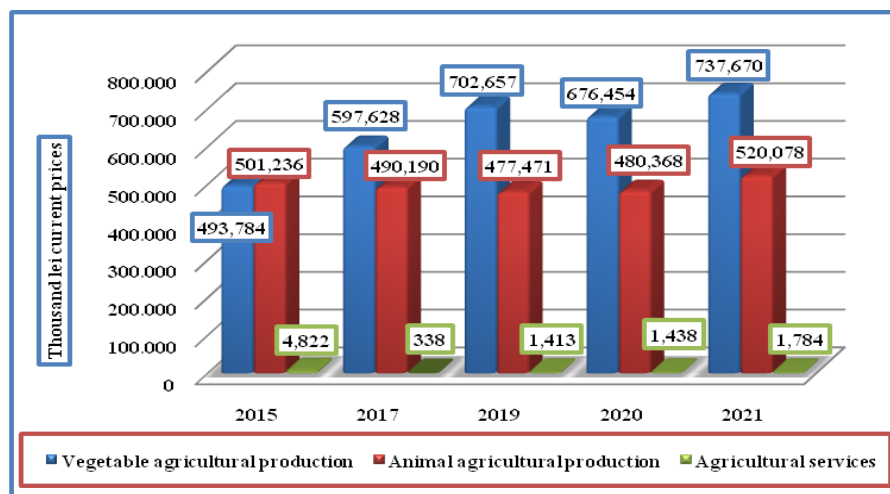


Figure 2. Value of agricultural production in Caras-Severin county

While in 2015 the income from the livestock sector was higher than that from the crop sector, over time, a trend can be seen for a reversal of these values, with a 58.48% share in 2021 compared to 41.16% for crop production. Unfortunately, the agricultural services sector has an insignificant share of only 0.14% in 2021 compared to the other sectors.

Given that about 82% of agricultural land is located on sloping land, considerable areas are subject to various anthropogenic degradation factors. This is mainly due to the character of the relief of the county, which is mostly mountainous and thus not conducive to large agricultural crops, as shown in Table 2.

Table 2.

The evolution of the areas cultivated with the main crops, in the period 2015-2022

Specification	2015	2018	2019	2020	2021	2022
The cultivated area, of which	75,491	82,725	77,356	76,150	65,024	63,887
Cereals for grains, of which	42,227	42,722	42,345	40,716	36,154	36,288
- Wheat and rye	13,143	18,559	18,870	20,454	14,449	15,049
- Barley and barley	655	1040	1,333	682	931	1,080
- Grain maize	26,231	20,487	19,310	16,904	18,577	18,717
Sunflower	7,251	6,340	4,584	6,170	3,786	2,305
Rapeseed	2,417	6,669	2,116	4,205	3,856	4,594
Sugar beet	9,385	13,816	7,793	13,574	8,269	3,593
Potatoes	4,861	5,005	5,014	3,013	2,636	2,021
Vegetables	1,839	2,080	2,082	1,974	1,978	1,729

Source: <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>, INS

From the analysis of the data in Table 2, it appears that grain cereals, namely maize and wheat, represent the largest share of the existing crops in Caras-Severin county. Potatoes

and field vegetables are predominantly grown on individual farms, where most of them are grown for own consumption and smaller quantities are produced for market sale. (<https://www.7-zile.com/sapte-luni-de-agricultura-in-caras-severin/>)

The total area cultivated fluctuates from year to year, with the highest area recorded in 2018 and the lowest in 2022. A drastic decrease in cultivated area can be observed in sugar beet, reducing from 9,385 ha in 2015 to 3,593 ha in 2022.

The evolution of crop production in Caras-Severin county in the period 2015-2022 fluctuated from one year to the next, as can be seen in Figure 3.

In the year 2022, a total production of 142,954 tonnes was obtained for grain cereals, which is much lower than in previous years, but much higher than in 2015 when the total production was 111,795 tonnes.

We can say with certainty that the development of this indicator depends largely on climatic factors, which is why it is necessary to adopt certain measures in conditions of severe drought.

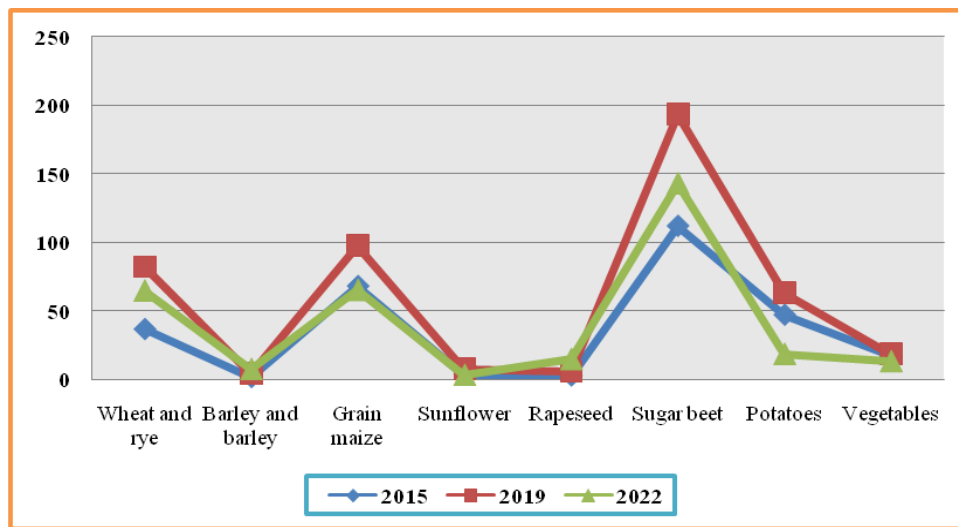


Figure 3. Evolution of vegetable agricultural production, in the period 2015-2020

Source: The author's processing according to the INS

In Caras-Severin county there was a severe drought in 2016 and 2018, therefore a decrease in average yields per hectare of the main agricultural crops can be observed (Table 3.).

We will analyze the average production for the last year, from the dynamic series 2015-2022, because the variability from one year to another is not very pronounced, except for barley and barley, where the average production per hectare almost doubled.

Table 3.

Average production per hectare of the main crops in Caras Severin county, 2015-2020
- kg/ha –

Specification	2015	2017	2018	2019	2020	2021	2022
Wheat and rye	2795	4681	4230	4349	4412	4634	4311
Barley and barley	2889	4078	4983	3051	3559	4964	7221
Oat	1573	1653	1872	1963	2031	2164	2458
Grain maize	2595	3206	5868	5049	5357	4374	3494
Sunflower	1294	1479	2179	1700	2200	2184	1559
Rapeseed	1253	2596	1658	2544	3101	2845	3268
Soy beans	778	1398	2476	2395	2792	2061	1412
Potatoes - total	9618	15592	13822	12531	11362	9992	9312
Tomato	8031	10207	10880	9960	19799	10173	8304
Cabbage	15067	11448	15367	14447	23023	14166	11633
Lucerne (green mass equivalent)	18436	12551	19295	17065	16591	16667	15234
Clover (green mass equivalent)	16606	11056	13511	11688	11415	11489	9409

Source: Processing according to INS, 2016-2022, <https://carasseverin.insse.ro/>

The average yield in 2022 for wheat and rye was 4311 kg/ha, down from 2021 when the average yield was 4634 kg/ha and up from 2015 when the average yield was 2795 kg/ha.

For maize, the situation is similar to that for barley and barley, while for the other crops the average yield per hectare fluctuated from one year to the next.

Consequently, investments made through access to European funded programmes have increased the level of equipping farms with state-of-the-art machinery, equipment and technologies, which have led both to lower operating costs per unit of product obtained and to higher average yields per hectare, all of which have increased the economic efficiency of the business.

CONCLUSIONS

Following the results of the research carried out in Caras-Severin county, the following conclusions can be drawn:

The level of development of agriculture depends on the development of other branches of the national economy and the food security of the population, which, with regret, we can say is to a certain extent ensured by the import of agri-food products.

Caras-Severin county has an area of 386,778 ha and accounts for 3.6% of the country's surface area, ranking third in terms of size among the country's counties. Although Caras-Severin is the third largest county in the country, in terms of agricultural area (386,778 ha) it ranks only 13th, due to its predominantly mountainous terrain.

Of the total agricultural land in the study area, about 82% is located on sloping land, due to the relief which is mostly mountainous and not suitable for large agricultural crops.

Caras-Severin county has an agricultural area of 851,976 hectares and the arable area in 2020 was 386,778 hectares.

As for the area of the forest fund of Caras-Severin County, it is 411,276 ha, of which 402,600 ha are covered with forests. The coniferous forests cover 47,200 ha and the deciduous forests 355,400 ha.

The average yield per hectare of the main crops has fluctuated from one year to the next, with a downward trend, except for barley and barley, where the average yield per hectare has almost doubled.

BIBLIOGRAPHY

- BRAD IOAN, DINCU ANA-MARIANA, SIRBU CORINA, 2014 - Study regarding the diagnosis on livestock production in the west area, *Lucrări științifice Management Agricol, Seria 1*, vol. XVI (2) „Managementul dezvoltării rurale durabile”, Facultatea de Management Agricol, Timișoara, ISSN 1453-1410, pg. 123-126.
- DINCU ANA-MARIANA, 2014 - Studies on the dynamics of livestock production in Romania, *Lucrări Științifice Zootehnie și Biotehnologii (Scientific Papers: Animal Science and Biotechnologies)*, Timișoara, ISSN 1221-5287, pag. 317-319.
- MIHUȚ, C., OKROS, A., IORDĂNESCU, O., 2012 - Research on the soils of Western Romania. XI Wellmann International Scientific Conference, Review on Agriculture and Rural Development, *Scientific Journal of University of Szeged, (Hungary) Faculty of Agriculture*, 1(S1).
- MIHUȚ, CASIANA ANIȘOARA DUMA COPCEA, LUCIAN NIȚĂ, ADALBERT OKROS, SIMONA NIȚĂ, DANIEL POPA, VLAD MIRCOV, CORINA SIRBU, 2023 - Economic efficiency of soils from Banat's Vineyards. *AgroLife Scientific Journal*. Vol. LXVI, Issue 2. <https://agronomyjournal.usamv.ro/index.php/27-articles/articles-2023-issue-2/1644-economic-efficiency-of-soils-from-banat-s-vineyards>
- MIHUȚ CASIANA, VALERIA CIOLAC, ANIȘOARA DUMA COPCEA, ADALBERT OKROS, DANIELA SCEDEI, 2022 - Analysis of the influence of pedogenesis factors on soil formation using modern methods. *International Multidisciplinary Scientific GeoConference : SGEM*; Sofia, Vol. 22, Iss. 3.1, (2022). DOI:10.5593/sgem2022/3.1/s13.27
- SÎRBULESCU CLAUDIA, PIRVULESCU LUMINITA, CRISTEA TEODOR, BRAD IOAN, DINCU ANA-MARIANA, 2016 - Study regarding the performances of main sectors of activity from Romania's agriculture, *Conference Proceedings*, ISBN 978-619-7105-67-4 / ISSN 1314-2704, Book5 Vol. 3, Albena, Bulgaria, pp. 561-568.
- ȘMULEAC L., TULBURE C., 2021 - The Influence Of Agricultural Activities On The Quality Of Groundwater In Mehedinti County. *Research Journal of Agricultural Science*, 2021, Vol 53, Issue 4, p105. ISSN 2066-1843.
- INSTITUTUL NAȚIONAL DE STATISTICĂ – INS.
MONOGRAFIE CARAS SEVERIN. Pdf.
<http://www.hartaromanieionline.ro/harta-judet-Caras-Severin/>.
https://ro.wikipedia.org/wiki/Jude%C8%9Bul_Cara%C8%99-Severin.
<https://www.7-zile.com/sapte-luni-de-agricultura-in-caras-severin/>
<https://carasseverin.insse.ro/>
<http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>
<https://www.radioresita.ro/actualitate/agricultura-judetului-caras-severin-lasa-de-dorit>
<https://resita.ro/terenuri-agricole-lasate-parloaga-jumatate-din-suprafata-arabila-a-judetului-caras-severin-a-ramas-nelucrata-in-2021/>.