

A STATISTICAL OVERVIEW ON THE PRODUCTS CERTIFIED WITH NATIONAL AND INTERNATIONAL QUALITY SCHEMES IN ROMANIA'S 8 DEVELOPMENT REGIONS

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Abstract

Romania is organized with all the 41 counties into 8 development regions. Some regions have an important representation for quality schemes and products that enrich the cultural and gastronomic heritage of the area. Among the 4,857 certified products at national level, the highest share belongs to mountain products, an aspect which consolidates the national and not necessarily international representativeness. The purpose of the paper is to analyse the status of agri-food products with national recognition and products with international recognition regarding the attestation of quality schemes. The Pearson correlation coefficient and the linear and polynomial regression functions (2nd, 3rd and 4th degree) were used to analyze the relationship between the number of certified products and the number agricultural holdings. The data are collected from national and European registers (e-Ambrosia). For the certified products, the data were extracted for the period 2005-2023, and regarding agricultural holdings, 2002-2020 was analyzed. The results pointed out that there is no direct relationship between agricultural holdings and the number of certified products and that the center and northwest regions are the ones that best represent Romania in terms of agro-food products with gastronomic value and certified quality.

Key words: quality schemes, agricultural holdings, Romania, agri-food products, gastronomic heritage

INTRODUCTION

Since 1998, Romania has been organized into 8 development regions: North-East Region, South-East Region, South-Muntenia Region, South-West Oltenia Region, West Region, North-West Region, Center Region and Bucharest-Ilfov Region. These being the means by which the regional development policy is implemented [1].



Map 1. Romania's 8 development regions
Source: [2], [19].

The Ministry of Agriculture and Rural Development promotes food products registered in various national and European quality schemes [12].

The national representativeness is consolidated through the 4,857 certified products - mountain products have the largest share. The certified products with Protected geographical indication, Protected designation of origin and Traditional specialities guaranteed having a very low share in Romania, 0.3% of the total certified products. This aspect is due to the fact that international quality schemes involve much more rigid and complex attestation conditions. Certification costs are high in terms of samples for analysis reports and annual fees charged by certification bodies.

Many consumers in developed countries of the European Union and part of consumers in Romania give a great importance to food

quality that they intend to purchase and consume [17].

Through national or European quality systems for agricultural and food products, consumers receive assurance about the quality and characteristics of the products or the production process; these aspects of the voluntary certification represent an added value for the certified products [18].

In this context, the purpose of the paper is to analyse the status of agri-food products with national recognition and products with international recognition regarding the attestation of quality schemes.

MATERIALS AND METHODS

The analysis perspective will involve organization by region (i.e. the 8 development regions of Romania).

During the documentation and research process, information collected from the public registers provided by the Ministry of Agriculture and Rural Development was used for analysis. Databases from the archive of the National Institute of Statistics (NIS) were also analyzed. The reference year is 2020, being the last update valid at the time of the research. The documents and NIS databases are updated even though the data from the last 3 years are not provided (2021, 2022 and 2023) because this kind of massive nationwide data collection involves an impressive logistics and the data do not fluctuate wildly from year to year.

General data and provisional data were collected by development regions and counties such as: number of agricultural holdings with legal personality and number of agricultural holdings without legal personality and agricultural holdings with used agricultural area and livestock. The time horizon under which the data were analyzed was 2002-2020 (assuming only the years 2002, 2005, 2007, 2010, 2013, 2016, 2020).

The information used in writing this paper were collected from the EU databases (e-Ambrosia and the EU geographical indications register) [3],[4],[5], for products with protected geographical indication, products with protected designation of origin

and products with guaranteed traditional specialty.

All data from the national documents provided by MARD are collected until June 2023. Regarding traditional products, data were collected for a period of 18 years (2005-2023) through the National Register of Traditional Products (NRTP) [9]. Also analyzed were the National Register of Mountain Products (NRMP) between 2017-2023 [8],[10] and the National Register of Products Certified According to Consecrated Recipes (NRPCP) during the period 2014-2023 [7],[11].

In this paper the correlation method was used by applying the Pearson coefficient, the linear function and the polynomial function of the 2nd, 3rd and 4th degree. The purpose of using this method is to highlight and exemplify the relationship between certified products and agricultural holdings.

This research presents the status of the of products certified by national and international quality schemes in the state of Romania between 2005-July 2023 in correlation with the number of agricultural holdings between the years 2002-2020.

The research based on the data analysis involved the brief evaluation of the basic documents in the process of authorizing a product to a quality scheme, either national or international, and also the collection of information found in official documents, regulations, laws, registers, announcements, both nationally and internationally. The data interpretation was done for the period 2005-2023.

RESULTS AND DISCUSSIONS

Romania has 4,857 products certified through quality schemes; being poorly represented at the level of the European Union (13 certified products), but having a much greater recognition at the level of national quality schemes with 755 products certified as a traditional product, 58 products obtained from established recipes and 4,044 mountain products. Also, in the field of wines and spirits, Romania stands out with 62 products certified with Geographical Indication.

Romania is characterized by its gastronomic heritage of national products, and much less of international ones.

Regarding the accreditation process, the waiting time is also an important element to

mention. Generally, at the national level it takes from a few days to a month until a product is actually mentioned into the National Registers. While internationally, in order to register a product

Table 1. Status of products with national recognition and products with international recognition - by county

Crt. No.	County	Traditional products	Products with consecrated recipes	Mountain products	Total number of national products	Protected geographical indication	Protected designation of origin	Traditional speciality guaranteed	Total number of international products
1	Alba	49	0	122	171	0	0	0	0
2	Arad	7	0	3	10	1	0	0	1
3	Argeş	47	0	63	110	1	0	0	1
4	Bacău	4	0	190	194	0	0	0	0
5	Bihor	8	0	25	33	0	0	0	0
6	Bistriţa Năsăud	32	10	622	664	0	0	0	0
7	Botoşani	26	9	x*	35	1	0	0	1
8	Braşov	173	0	107	280	1	0	0	1
9	Brăila	0	0	x*	0	0	0	0	0
10	Bucureşti	19	0	x*	19	0	0	0	0
11	Buzău	33	0	21	54	1	0	0	1
12	Caraş-Severin	12	0	179	191	0	0	0	0
13	Călăraşi	0	0	x*	0	0	0	0	0
14	Cluj	15	1	215	231	0	0	0	0
15	Constanţa	1	0	X	1	0	0	0	0
16	Covasna	23	0	459	482	0	0	0	0
17	Dâmboviţa	5	0	17	22	0	0	0	0
18	Dolj	3	1	x*	4	0	0	0	0
19	Galaţi	14	3	x*	17	0	0	0	0
20	Giurgiu	1	0	x*	1	0	0	0	0
21	Gorj	9	0	162	171	0	0	0	0
22	Harghita	2	0	249	251	0	0	0	0
23	Hunedoara	10	0	188	198	0	0	0	0
24	Ialomiţa	0	0	x*	0	0	0	0	0
25	Iaşi	23	0	x*	23	0	0	0	0
26	Ifov	4	2	x*	6	0	0	0	0
27	Maramureş	58	1	295	354	0	0	0	0
28	Mehedinţi	3	0	8	11	0	0	0	0
29	Mureş	3	2	77	82	0	1	0	1
30	Neamţ	29	0	167	196	0	0	0	0
31	Olt	3	0	x*	3	0	0	0	0
32	Prahova	6	0	44	50	0	0	0	0
33	Sălaj	15	0	0	15	0	0	0	0
34	Satu Mare	28	0	110	138	0	0	0	0
35	Sibiu	17	18	159	194	2	0	0	2
36	Suceava	23	0	162	185	0	0	0	0
37	Teleorman	0	0	x*	0	0	0	0	0
38	Timiş	4	1	3	8	0	0	0	0
39	Tulcea	21	0	x*	21	3	0	2	5
40	Vâlcea	22	10	345	377	0	0	0	0
41	Vaslui	3	0	x*	3	0	0	0	0
42	Vrancea	0	0	52	52	0	0	0	0
Total number of products		755	58	4,044	4,857	10	1	2	13

*x=County that is not in the mountain area according to the List of Territorial Administrative Units in the mountain area - the delimited area according to the National Rural Development Program 2014 – 2020 [6]

Source: Own calculation based on the data from [3],[4],[5],[6],[7],[8],[9],[10],[11],[12].

According to the data extracted from the previously mentioned national registers and from the e-Ambrosia database, the Register of

traditional specialties guaranteed and the European Union Register of products with geographical indication, it is observed that the

first 5 places in the ranking of counties with the most certified products are occupied by Braşov, Maramureş, Alba, Argeş and Buzău for traditional products and Harghita, Maramureş, Vâlcea, Covasna and Bistriţa-Năsăud for mountain products. The top 5 counties do not coincide or overlap a specific county. We cannot mention that there is an uniformity, on the contrary, the categories of products and quality schemes differ from one area to another, mainly due to the specifics of the respective county. Among the 8 development regions of Romania, two of them have a representative character: the Center Region and the North West Region account for a large part of the certified food products (2,899 products out of a national total of 4,870). Out of a total of 42 counties (41 counties + Bucharest Municipality), the mountain area is represented by 64% of the counties at national level.

Bistrita-Năsăud County leads the list of mountain products at the national level with an impressive advantage: 622 certified products from 2017 to mid-2023. The next county in the ranking is Covasna with 459 mountain products. It is concluded that in the period 2017-2023, 4,044 products were registered at national level. Sălaj is the only county located in the mountainous area, but which does not yet have any certified product. Arad, Timiş, Mehedinţi and Dâmboviţa are the counties with the fewest mountain products in the whole country.

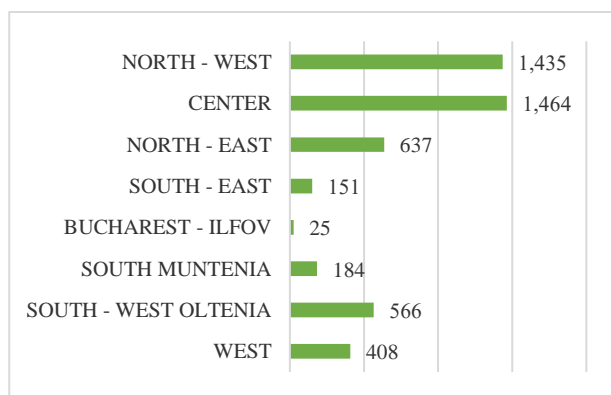


Fig. 1. Status of certified products by regions
Source: Own calculation based on the data from Table. 1.

There are counties that have no certified products at all, but analyzing by region, the

situation balances out – each region having at least 150 products (except Bucharest-Ilfov with 25 products).

The Southwest Oltenia region consists of the counties: Dolj, Gorj, Mehedinţi, Olt and Vâlcea. It presents 556 certified products (40 traditional products, 11 products obtained from established recipes and 515 mountain products). These 5 counties represent 12% of the total of 4,857 certified products at national level.



Map 2. The location of Valcea county on the Romanian map
Source: [20].

Vâlcea County is the most representative in terms of certifying products with added value and proven quality. From the whole region, Vâlcea has a large part of certified products: 377 products, being also important in the mountainous region for its specific products. Valcea has a predominantly mountainous relief in the Northern part and is named as a historical county with tourist attractions in the area of resorts and monasteries.

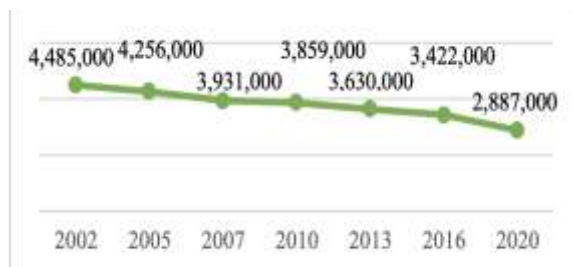


Fig. 2. Status of agricultural holdings in Romania
Source: Own calculation based on the data from [13], [14].

According to the data provided by the National Institute of Statistics and analyzing

according to the category they belong to, at the end of 2022 there were 25,394 agricultural holdings with legal personality and 2,861,673 holdings without legal personality. The latter including: individual agricultural holding, PFA (authorized person), II (individual enterprise) and IF (family enterprise). Agricultural holdings with legal personality

represent slightly less than 1% of the total holdings.

In 2002, there were almost 4.5 million agricultural holdings in total in Romania. Since then, their number is constantly decreasing resulting in 2,887,067 agricultural holdings in 2020.

Table 2. Status of agricultural holdings with used agricultural area and livestock

Development region	Total number of agricultural holdings	Agricultural holdings with used agricultural area and livestock	Agricultural holdings only with used agricultural area	Agricultural holdings only with livestock
NORTHWEST	443,059	228,699	212,564	1,793
CENTER	318,475	165,062	149,033	4,380
NORTH - EAST	592,998	397,513	190,118	5,366
SOUTH EAST	324,061	205,304	112,041	6,712
BUCHAREST - ILFOV	17,234	7,907	8,977	350
SOUTH MUNTENIA	521,961	313,340	192,398	16,219
SOUTH-WEST OLTENIA	466,512	331,624	126,254	8,634
WEST	202,767	123,219	77,443	2,104
TOTAL	2,887,067	1,772,668	1,068,828	45,558

Source: Own calculation based on the data from [13], [14].

Romania is at the top of the EU-28 ranking with 33.61% of agricultural holdings. Also important to mention are Poland (13.18%), Italy (9.31%) and Spain (8.9%). These 4 states represent an impressive number of farms - 7,034 million, which is 64.8% of the total number of agricultural holdings in the EU-28 [15, 16].

Agricultural holdings with livestock were taken into account, as well as those with agricultural land, because the certified product categories are complex (meat products, milk products, vegetable or fruit products, beverages, bakery and pastry products).

The statistical-mathematical method involves correlations between various variables relevant to the research topic. In the present case, the variables being the number of agricultural holdings with and without legal personality and the number of products

certified with national and international quality schemes.

The correlation method was used applying the Pearson coefficient, the linear function, and the polynomial function (of the 2nd, 3rd and 4th degree) using the data collected from Table 2.

The Pearson coefficient value of 0.2935 (Table 3) assumes that there is a weak correlation between the number of agricultural holdings and number of certified products, because it is a very large number of farms and a small number of certified products.

The analysis method results in a positive but weak correlation as the values of coefficients (Table 3) falls between -0.5 and -0.25 and between 0.25 and 0.5.

The interpretation of the positive correlation coefficient assumes that when one variable changes, the other variable changes in the same direction.

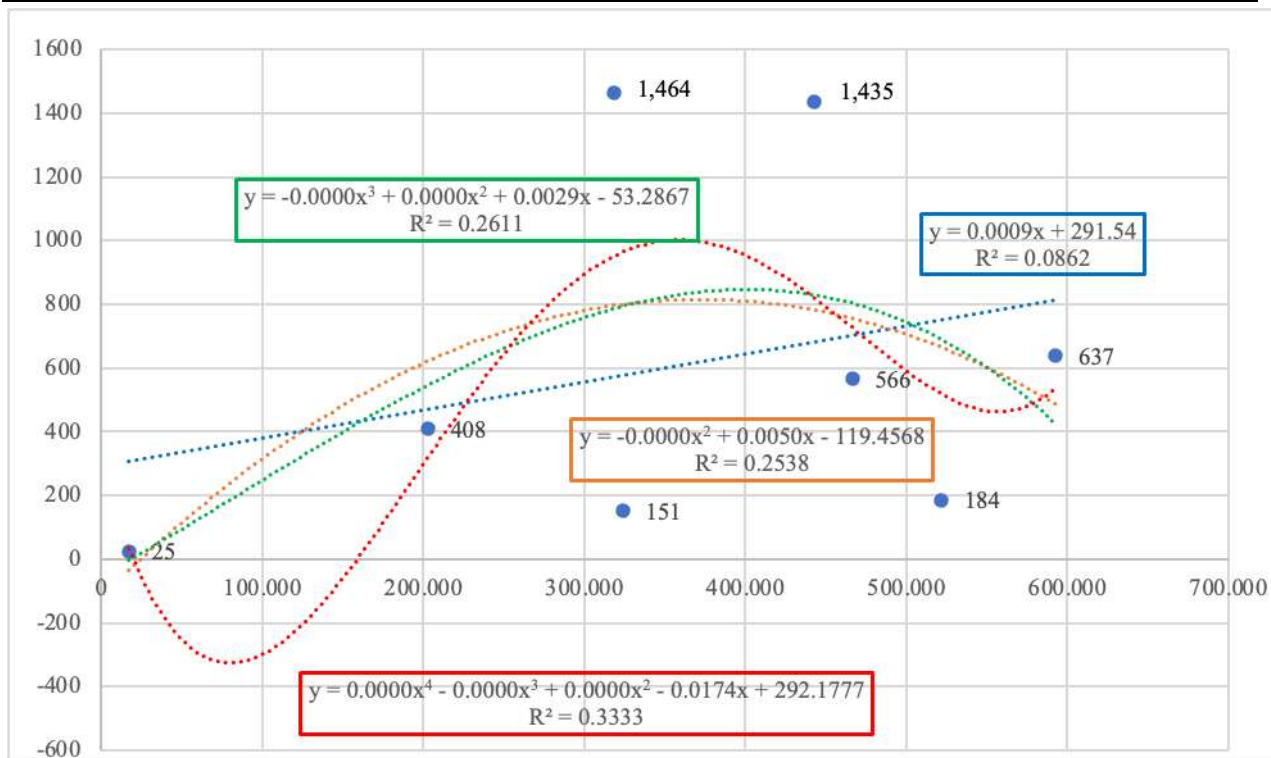


Fig. 3. Corellation between agricultural holdings and number of certified products
 Source: Own calculation based on the data from Table 2.

Table 3. Correlation variables

Correlation variables	r	R ²	R ²	R ²	R ²
Agricultural holdings/ Certified products	Pearson coefficient	Linear function	Polynomial function (2nd degree)	Polynomial function (3rd degree)	Polynomial function (4th degree)
	0.2935	0.0862	0.2538	0.2611	0.3333

Source: Own calculation based on the data from Fig. 3.

The values of the variables assume a direct influence, but, if the values are closer to 0, this suggests that the number of certified products is not necessarily influenced by the number of holdings, implying other factors in the analysis.

CONCLUSIONS

The poor representation of internationally certified products in Romania is mainly due to the demanding quality requirements for the whole production process. Other elements that do not make it easy to certify products with international schemes are the complexity and costs regarding the initial certification. International certification requires much more effort and attention from the producer. In the case of products with national recognition, the certification process is easier and takes less

time. Certainly, in the case of international schemes, the producer needs a consultant to be able to facilitate the fulfilment of the attestation procedures.

Most of the products certified by quality schemes in Romania have representative elements from the mountain area. A number of 4,044 mountain products are certified until July 2023.

The mountainous area in Romania is represented by 64% of the counties. The Carpathian Mountains are located in the Czech Republic, Slovakia, Poland, Hungary, Ukraine, Romania and Serbia and are part of the great central mountain system of Europe. The largest share is located in Romania - 51% of the Carpathian Mountains (91 mountains). In 2002, there were almost 4.5 million agricultural holdings in total in Romania.

Since then, their number is constantly decreasing, reaching 2,887,060 in 2022.

Applying the Pearson coefficient for the variables number of agricultural holdings and number of traditional products, a direct and positive correlation results. However, as it approaches 0, there is no predominant relationship. The correlation is not very strong, implying other important factors. In fact, the degree of correlation is weak towards zero correlation.

REFERENCES

- [1] Agency for regional development Muntenia, <https://www.adrmuntenia.ro/index.php/dezvoltare-regionala/static/2#:~:text=Pentru%20a%20putea%20fi%20implementată,o%20Agenție%20pentru%20dezvoltare%20regională>, Accessed on July 10, 2023.
- [2] DIGI 24, Romania's 8 development regions, <https://www.digi24.ro/stiri/economie/finante-economie/in-ce-regiuni-se-creaza-pib-romaniei-941623>, Accessed on July 10, 2023.
- [3] DOOR- EU Data base of origin and registration (EU Register of products with geographical indication), <https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/geographical-indications-register/>, Accessed on July 10, 2023.
- [4] E-Ambrosia, 2023, European Union Register of Geographical Indication Products, <https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/geographical-indications-register/>, Accessed on July 10, 2023.
- [5] E-Ambrosia, 2023, Register of traditional specialties guaranteed, <https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/geographical-indications-register/tsg>, Accessed on July 10, 2023.
- [6] Ministry of Agriculture and Rural Development, MARD, 2019, List of units administered according to PNDR 2014-2020, <https://www.madr.ro/docs/ind-alimentara/2019/produs-montan/Lista-Unitatilor-Administrativ-Teritoriale-din-zona-montana-UZM-19.08.2019.xlsx>, Accessed on July 10, 2023.
- [7] Ministry of Agriculture and Rural Development, MARD, 2022, National register of consecrated recipes, https://www.madr.ro/docs/ind-alimentara/retete_consacrate/2022/RNRC-20.12.2022.xlsx, Accessed on July 10, 2023.
- [8] Ministry of Agriculture and Rural Development, MARD, 2023, National Register of Mountain Products, year 2023, https://www.madr.ro/docs/ind-alimentara/2023/RNPM_29.06.2023.xlsx, Accessed on July 10, 2023.
- [9] Ministry of Agriculture and Rural Development, MARD, 2023, National Register of Traditional Products, <https://www.madr.ro/docs/ind-alimentara/produse-traditionale/2023/RNPT-30-iunie-2023.xlsx>, Accessed on July 10, 2023.
- [10] Ministry of Agriculture and Rural Development, MARD, 2023, The 2023 national register of mountain products - updated version on 29.06.2023, https://www.madr.ro/docs/ind-alimentara/2023/RNPM_29.06.2023.xlsx, Accessed on July 10, 2023.
- [11] Ministry of Agriculture and Rural Development, MARD, 2023, The national register of products certified according to Consecrated recipes, https://www.madr.ro/docs/ind-alimentara/retete_consacrate/2023/RNPARC-iunie2023.xlsx, Accessed on July 10, 2023.
- [12] Ministry of Agriculture and Rural Development, MARD, 2023, The register of systems in the field of national protected quality, called RSCPN according to Order no. 1762/2015, <https://www.madr.ro/docs/ind-alimentara/2023/RSCPN-update-27.06.2023.xls>, Accessed on July 10, 2023.
- [13] National Institute of Statistics, 2023, General agricultural census round 2020 – provisional data, <https://insse.ro/cms/ro/content/recens%C4%83m%C3%A2ntul-general-agricol-runda-2020-%E2%80%93-date-provisorii>, Accessed on July 10, 2023.
- [14] National Institute of Statistics, 2023, General Agricultural Census, 2020 round, volume II - General data of the 2020 general agricultural census, by macro-regions, development regions and counties, https://insse.ro/cms/sites/default/files/field/publicatii/rga2020vol_2.pdf, Accessed on July 10, 2023.
- [15] Popescu, A., 2023, Farm structure and farmland concentration in Romania and in other selected EU's countries with large utilized agricultural area, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.23(1), 603-618.
- [16] Popescu A., Alecu I. N., Dinu T. A., Stoian E., 2016, Condei R., Ciocan H., Farm Structure and Land Concentration in Romania and the European Union's Agriculture, Agriculture and Agricultural Science Procedia, Volume 10, 566-577, <https://www.sciencedirect.com/science/article/pii/S2210784316302297>, Accessed on September 5, 2023.
- [17] Vladu, C. A., Sperdea, N. M., Vladu, M., 2016, International Multidisciplinary Scientific GeoConference: SGEM; Sofia, Vol. 3, Study on commercialization of Pdo, Pgi and Tsg food products in Craiova city, Romania, <https://www.proquest.com/docview/2014407226?pq-origsite=gscholar&fromopenview=true>, Accessed on September 5, 2023.
- [18] Vladu, M., Vladu, C. A., Uliu, D. V., 2022, Studies on the management of the integration of quality schemes for agri-food products, Annals of Craiova University, Series Agriculture, Montanology and Cadastre, Vol. 52(2), <https://anale.agro-craiova.ro/index.php/aamc/article/view/1425/1350>, Accessed on September 5, 2023.

[19]Wikipedia.org, 2023, Map of the development regions (NUTS-2 level divisions), https://upload.wikimedia.org/wikipedia/commons/thumb/0/03/Regiuni_de_dezvoltare.svg/700px-Regiuni_de_dezvoltare.svg.png, Accessed on September 5, 2023.

[20]Wikimedia.org, 2023, The location of Valcea county on the Romanian map, https://upload.wikimedia.org/wikipedia/commons/thumb/3/3d/Valcea_in_Romania.svg/500px-Valcea_in_Romania.svg.png, Accessed on September 5, 2023.