

THE CEREAL SECTOR IN THE NORTH-WEST REGION, ROMANIA

Chiurciu Irina-Adriana*, Chereji Aurelia-Ioana, Soare Elena*, Dana Daniela***, Voicu
Valentina****, Chereji Ioan Jr.**, Firatoiu Andreea-Roxana***

*University of Agronomic Sciences and Veterinary Medicine Bucharest, Faculty of Management and Rural Development, 59 Marasti Blvd, 011464, District 1, Bucharest, Romania, e-mail: chiurciu.irina@managusamv.ro, soare.elena@managusamv.ro, androx_chi@yahoo.com

**University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048, Oradea, Romania, e-mail: aureelia_brinaru@yahoo.com, i.chereji83@yahoo.com

***Technological Secondary-School Prundu, Giurgiu, Romania, Stoenesti-School, Giurgiu, Romania, e-mail: ddanaddaniela@gmail.com

****National Research and Development Institute for Soil Science, Agrochemistry and Environment - ICPA, 61 Marasti Blvd, 011464, District 1, Bucharest, Romania, e-mail: valy_76@yahoo.com; & "Dunarea de Jos" University of Galati, Faculty of Engineering and Agronomy of Brăila, 29 Călărășilor Str., 810017, Braila, Romania, Email: valentina.cotet@ugal.ro

Abstract

The paper presents the situation of the cereal sector in the North-West Region, a sector represented by the following main crops: maize, wheat, barley, oat and rye. The areas cultivated with these cereals and the productions obtained in the period 2015-2020 are analyzed.

Maize and wheat were detached, occupying the largest areas and having the highest productions. Thus, in 2020, maize was cultivated on 267,679 ha and obtained a production of 1,624,102 tons. The maize area owned by the North-West Region represented 11%, and the maize production 16% of the country total. The wheat was on the 2nd place, which occupied 156,061 ha in 2020 and had a production of 593,572 tons. The area with wheat in the North-West Region represented 7%, and the production of wheat 9% of the country total.

The other cereals studied, barley, oat and rye had areas under 50,000 ha and productions below 100,000 tons in 2020.

Key words: maize, North-West Region, oat, productions, Romania, wheat

INTRODUCTION

Cereals are grown due to their specific nutritional characteristics, for which they are used both in human nutrition and for animal feed. At the same time, it represents the raw material for other sectors of activity. (Chiurciu, et al., 2020)

Romania has an important place in the European Union in the field of cereal cultivation. The data provided by Eurostat show that, in 2020, our country was on the first place in terms of the area cultivated with maize (2,680.10 thousand ha) and on the leading places for the areas cultivated with wheat (on the 4th place – 2,277.42 thousand ha) and barley (on the 6th place - 445.74 thousand ha).

Romania also had top places for cereal production in 2020: for maize, the 2nd place with 10,942.35 thousand tons, for wheat, the 4th place - 6,743.86 thousand tons. (Eurostat)

The object of the present study is the cereal sector in the North-West Region (Fig. 1), a region that stretches on 34,160 km² and in which most of the surface, 64%, is cultivated with cereals (*North-West RDA*).



Fig. 1 North-West Region
Source: North-West RDA

About 50% of the population lives in rural areas and 45.8% of the income registered in the North-West Region, as coming from the rural area, is obtained from agriculture. (Rural SMEs Interreg Europe, 2017)

After Chiurciu et al., 2018, apud Manole et al., 2014, Bihor county has the largest arable area in the Region.

The above information highlights the importance of the cereals sector in the north-west of the country.

MATERIAL AND METHOD

This study highlights the role of the North-West Region in the cereal's sector in Romania. To illustrate this aspect, the areas cultivated with the main cereals grown in this Region, namely maize, wheat, barley, oat and rye, were analyzed.

Also, the productions obtained from these crops were presented and then the contribution, in percentage, that the North-West Region brings to the total cereal areas of the country and to the total production obtained was studied.

The analyzed data were taken from statistical sites, such as the National Institute of Statistics and Eurostat, and then interpreted in tables and graphs. The period under study is 2015-2020.

RESULTS AND DISCUSSION

Figure 2 shows the evolution of cultivated areas in the North-West Region, with the main cereal crops, in the period 2015-2020. Maize occupied the largest area, and at the opposite pole was the rye. In 2016, maize registered 279,496 ha, ie the largest area, and in 2017 the smallest, of 254,391 ha. The next crop, according to the size of the areas, was wheat, for which in 2017 the smallest cultivated area was recorded, of 142,875 ha. Other cereal crops recorded less than 50,000 ha cultivated: barley and spring barley - 35,712 ha in 2020, oat - 18,390 ha in 2020 and rye, 963 ha in 2020.

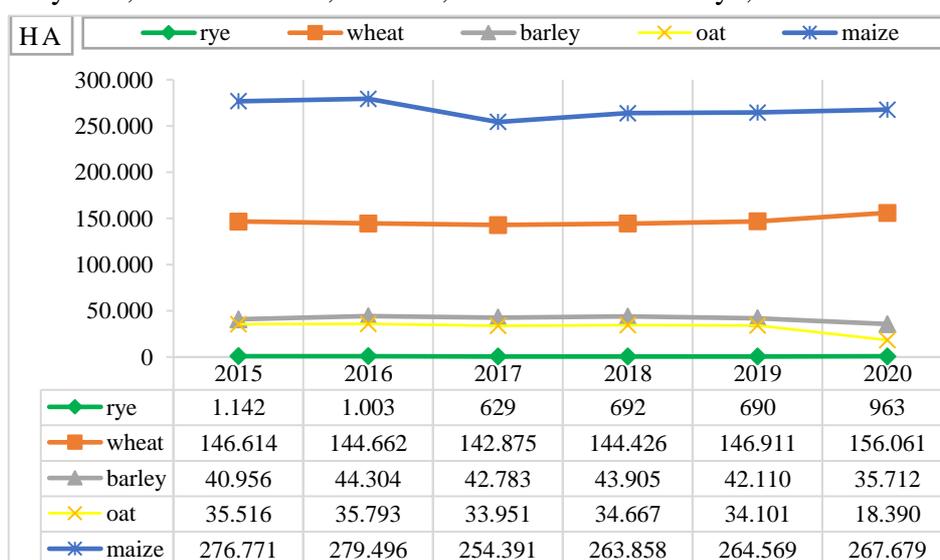


Fig. 2 Areas cultivated with the main cereal crops in the North-West Region, in the period 2015-2020, ha

Source: Own interpretation according to NIS

The only cereal plant, for which in the analyzed period, 2015-2020, the increase of cultivated areas was noticed was that of wheat, with 6% (Table 1).

For the other cereals studied, there was a decrease in areas in 2020, with 3% for maize, 13% - barley, 16% - rye and 48% for oat.

Table 1

Evolution of cultivated areas with the main cereal crops, 2015-2020, ha

Specification	2015	2020	2020/2015 %
Maize	276,771	267,679	276,771
Wheat	146,614	156,061	146,614
Barley and spring barley	40,956	35,712	40,956
Oat	35,516	18,390	35,516
Rye	1,142	963	1,142

Source: Own calculations according to NIS

Figures 3-7 show the share held by the North West Region in 2020 of the total cultivated areas at country level, with rye, wheat, barley, oat and maize:

- for rye - 8%, 963 ha (Fig. 3), which placed this Region on the 4th place, while on the first place was the North-East Region - 41%, 4,751 ha. The counties in the Region where the largest, respectively the smallest area with rye was cultivated were Bihor - 426 ha and Sălaj County, 4 ha;

- for total wheat - 7%, 156,061 ha (Fig. 4), representing the sixth position in the top of wheat-growing regions, in which the first place was occupied by the South-Muntenia Region with 28% - 602,801 ha. In Bihor county was found the largest area with total wheat - 90,709 ha, and in Maramureş county the smallest, 3,044 ha;

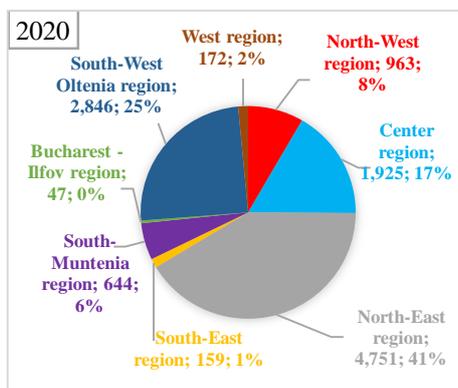


Fig.3 The share of cultivated areas with rye at regional level, 2020 (ha,%)

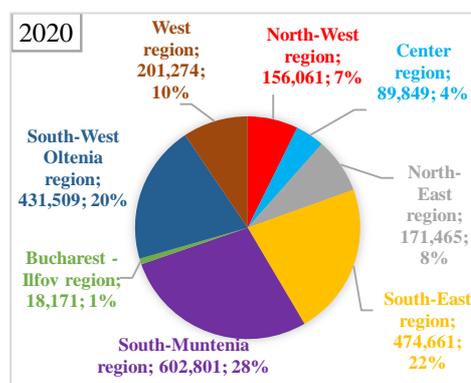


Fig. 4 Share of areas cultivated with wheat total at regional level, 2020 (ha,%)

Source: Own interpretation according to NIS

- for barley and spring barley - 8%, 35,712 ha (Fig. 5), meaning the 4th place in the ranking by country, where the first place was occupied by the South-East Region with 34% -148,625 ha. The largest barley grower in the Region was Bihor County - 13,220 ha, and the smallest barley area was found in Maramureş County, 558 ha;

- for oat - 18%, 18,390 ha (Fig. 6), the 2nd place, in the top of the regions, the first place being occupied by the North-East Region with 19% - 19.118 ha. The counties in the Region where the largest, respectively the smallest area with oat were cultivated were Bihor – 3.726 ha and Sălaj County, 1.007 ha;

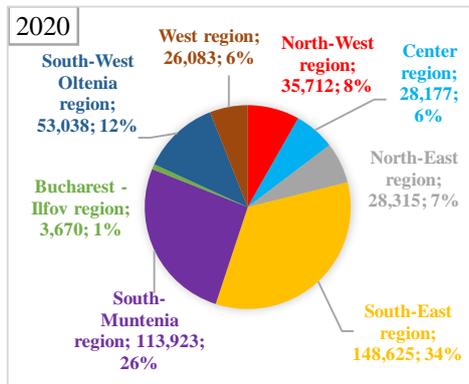


Fig.5 Share of cultivated areas with barley at regional level, 2020 (ha,%)

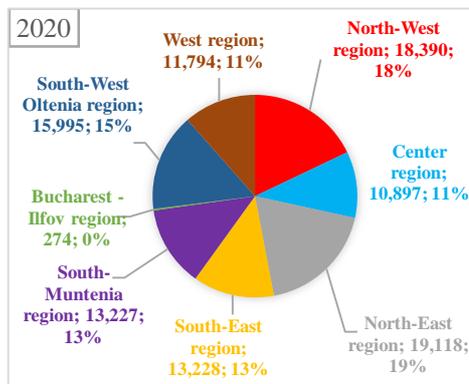


Fig.6 Share of cultivated areas with oat at regional level, 2020 (ha,%)

Source: Own interpretation according to NIS

- for maize - 11%, 267.679 ha (Fig. 7), the 5th place, in the top of the regions, in which the South-Muntenia Region held the first place with 21% - 545.508 ha. In Bihor county was found the largest area with corn – 91.261 ha, and in Bistrița-Năsăud county the smallest, 18.823 ha.

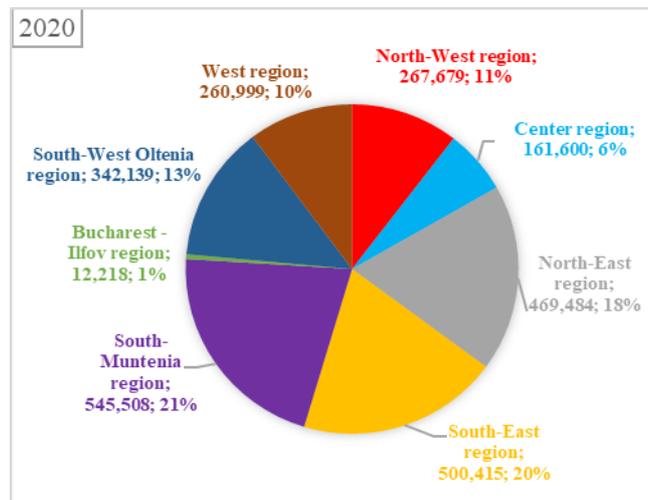


Fig. 7. Share of areas cultivated with maize at regional level, 2020 (ha,%)

Source: Own interpretation according to NIS

Figure 8 shows the evolution of production obtained in the North-West Region, for the main cereal crops, in the period 2015-2020. The largest quantity was obtained for maize, and rye was placed at the opposite pole, in accordance with the occupied areas. By 2018, when 1.953.648 tons were achieved, maize recorded increases in production, and then it began to decline. Wheat was the next crop in terms of production for which in 2016

the smallest quantity was recorded, of 488,888 tons. Other cereal crops recorded less than 100.000 tons: barley and spring barley – 97.161 tons in 2020, oats - 42,680 tons in 2020 and rye, 2.801 tons in 2020.

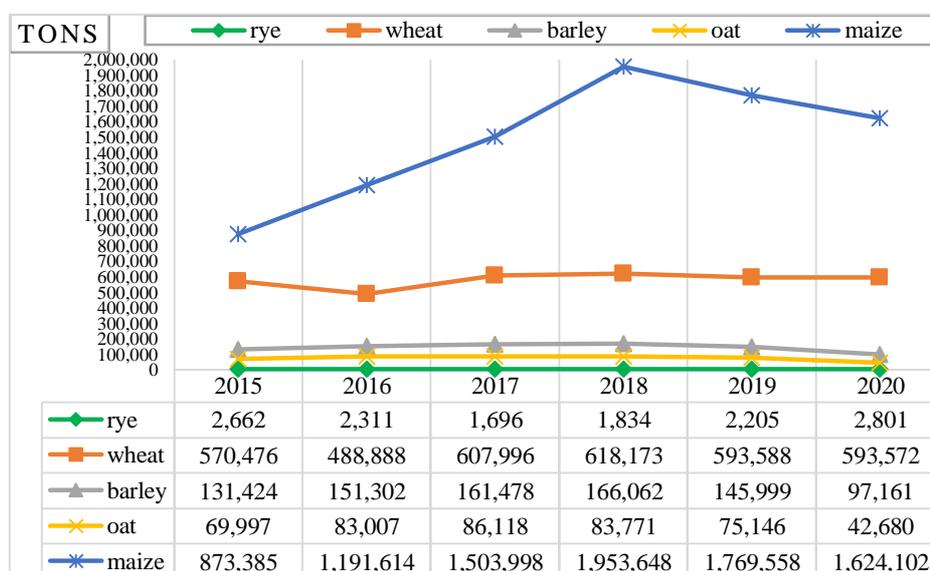


Fig. 8 Total production obtained for the main cereal crops, in the period 2015-2020, tons
Source: Own interpretation according to NIS

Increases in production for the analyzed period, 2015-2020, were observed in the following crops: maize - 86%, rye - 5% and wheat - 4% (Table 2). For the other cereals studied, there was a decrease in production in 2020, with 26% for barley and spring barley and 39% for oat.

Table 2

The evolution of the total production obtained for the main cereal crops, 2015-2020, tons

Specification	2015	2020	2020/2015 %
Maize	873,385	1,624,102	186
Wheat	570,476	593,572	104
Barley and spring barley	131,424	97,161	74
Oat	69,997	42,680	61
Rye	2,662	2,801	105

Source: own calculations according to NIS

Figures 9-13 show the share of total production of rye, wheat, barley, oat and maize in the North-West Region in 2020:

- for rye - 10%, 2,801 tons (Fig. 9), which placed this Region on the 4th place, while in first place was the North-East Region - 38%, 10.618 tons. The counties in the Region where the highest and the lowest rye production was obtained were Bihor - 1,364 tons and Sălaj County, 9 tons;

- for total wheat - 9%, 593,572 tons (Fig. 10), representing the sixth position in the top of wheat producing regions, in which the first place was occupied by the South-Muntenia Region with 27% - 1,753,266 tons. In Bihor county was found the highest production with total wheat – 369,424 tons, and in Maramureş county the lowest, 10,523 tons;

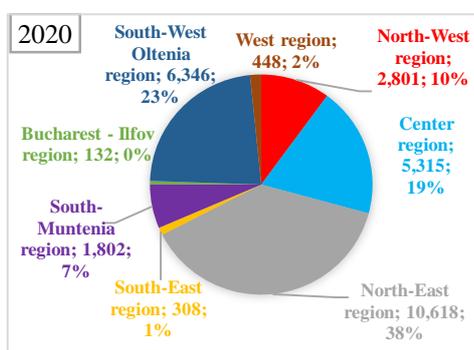


Fig. 9 Share of total rye production at regional level, 2020 (tons,%)

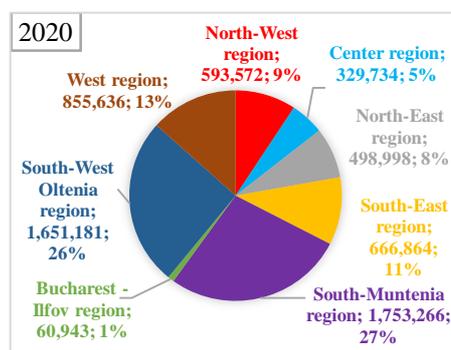


Fig. 10 Share of total wheat production at regional level, 2020 (tons,%)

Source: Own interpretation according to NIS

- for barley and spring barley - 9%, 97.161 tons (Fig. 11), meaning the 4th place in the country ranking, where the first place was occupied by the South-East Region with 32% -362,816 ha. The largest barley producer in the Region was Bihor County – 37,160 tons, and at the opposite pole was Maramureş County, 1,402 tons;

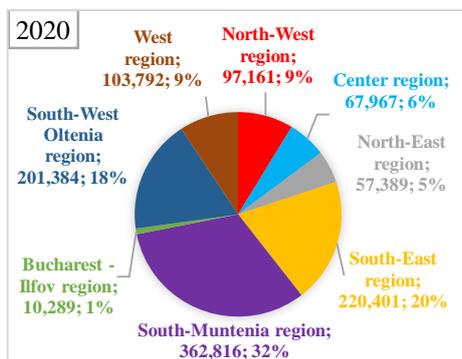


Fig. 11 Share of total barley production at regional level, 2020 (tons,%)

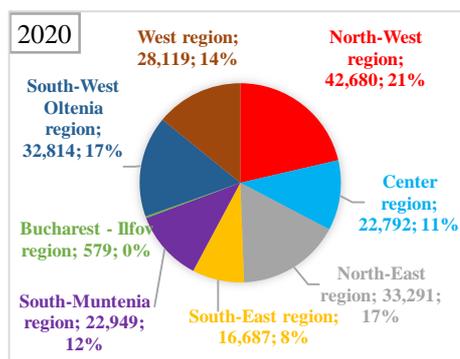


Fig. 12 Share of total oat production at regional level, 2020 (tons,%)

Source: Own interpretation according to NIS

- for oat - 21%, 42,680 tons (Fig. 12), the first place in the top of the regions, the 2nd place being occupied by the North-East Region with 17% - 33,291 tons. The counties in the Region where the largest and the smallest quantity of oats were harvested were Satu Mare – 14.451 ha and Sălaj County, 2.480 tons;

- for maize - 16%, 1,624,102 ha (Fig. 13), the 2nd place, in the top of the regions, in which the South-Muntenia Region held the first place with 21% -1,783,082 tons. The highest quantity of maize was obtained in Bihor county – 601,643 tons, and in Maramureş county the smallest, 77,006 ha.

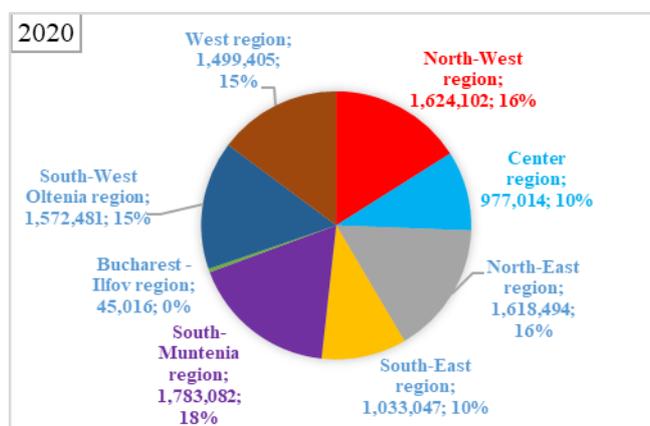


Fig. 13 Share of total maize production at regional level, 2020 (tons,%)
Source: Own interpretation according to NIS

Although it is an important cereal grower, which is highlighted by the places occupied in the tops at EU level, this fact is not supported by a high level of performance (Pânzaru RL & Medelete DM, 2017). As the average productions obtained in Romania were below the EU average, our country must increase its efforts to improve the competitiveness of this sector.

In this context, the implementation of the quality management system and its certification would constantly ensure the quality of production, from transport, storage to marketing (Balan, et al., 2020).

Another important element that must be taken into account is climate change, to which Romania must adapt. The use of appropriate agrotechnical practices and hybrids tolerant to stress at grain-filling period (Bonea D. & Dunareanu, 2021) are two of the methods that can be applied to overcome future problems.

CONCLUSIONS

Analyzing the data presented above, which illustrates the situation of the cereals sector in the North-West Region, the following can be concluded:

- The most cultivated cereals, in 2020, were corn and wheat, from which the largest productions in the Region were obtained;
- Other important cereal crops, grown in the Region, were, in order, barley, oat and rye;
- The area cultivated with oat in 2020 (18.390 ha) represented 18% of the country total and positioned the North-West Region as the second oat grower in the country;
- The North-West Region was in 2020 the largest producer of oat, obtaining a total production of 42,680 tons, which accounted for 21% of our country's production;
- With a maize production of 1,624,102 tons, in 2020 the North-West Region was the second largest producer in the region;
- Bihor County, which has the largest arable area in the region, stands out as the main grower and producer of cereals.

REFERENCES

1. Balan I.M., Lile R., Dincu A.-M., 2020, Pareto Diagram in the qualitative evaluation of wheat. *Lucrări Științifice Management Agricol/Scientific Papers Agricultural Management*, Vol. 22, No 1 (2020), 13-18, ISSN print 1453-1410, ISSN online 2069-2307,
2. Bonea D., Dunareanu I.C. 2021, Impact of thermal requirement on growth and grain yield of maize hybrids under rainfed conditions. *Scientific Papers. Series A. Agronomy*, Vol. LXIV, Issue 1, ISSN 2285-5785, 231-238
3. Chiurciu Irina-Adriana, Soare Elena, Constantin (Oprea) Dana Maria, Grigore Elena, Bogan Elena, 2020, Analysis regarding the evolution of the cereal sector in the North-East Region of Romania. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development* Vol. 20, Issue 4, 139-145, PRINT ISSN 2284-7995, E-ISSN 2285-3952, http://managementjournal.usamv.ro/pdf/vol.20_4/Art18.pdf
4. Chiurciu Irina-Adriana, Chereji Aurelia-Ioana, Soare Elena, Chereji Ioan Jr., 2018, Study on the evolution of agriculture in the North-West Development Region. *Annals of the University of Oradea, <>Issue: Ecotoxicologie, Zootehnie si Tehnologii de Industrie Alimentara/Ecotoxicology, Animal Husbandry and Food Industry Technologies*, Vol.XVII/A 2018, pag.9-16, ISSN:1583-4301,http://protmed.uoradea.ro/facultate/publicatii/ecotox_zooteh_ind_alim/2018A/Agri/Chiurciu%20Irina.pdf

5. Manole Al., Diaconu A., Anghel M. G., 2014, General aspects concerning the development of the North-West Region of Romania.
http://www.revistadestatistica.ro/supliment/wp-content/uploads/2014/11/RRSS19_2014_A11.pdf
6. Pânzaru R.L., Medelete D.M. 2017, Some considerations concerning the Romanian production of maize in European context (2012 - 2014). Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 17 ISSUE 4, PRINT ISSN 2284-7995, 237-242
7. Agenția de Dezvoltare Regională Nord-Vest/ North-West RDA Regional Development Agency, Broșura FACTS/ FACTS Brochure, <https://www.nord-vest.ro/>
8. Eurostat, <https://ec.europa.eu/eurostat/data/database>, accessed on 15.09.2021
9. NIS, National Institute of Statistics, Tempo On-line Database, 2018, www.insse.ro, Accessed on 11.09.2021
10. <https://www.interregeurope.eu/ruralsmes/news/news-article/1097/introducerea-regiunii-nord-vest-romania/>, Accessed on 04.09.2021.