

ANALYSIS REGARDING THE EVOLUTION OF THE CEREAL SECTOR IN THE NORTH-EAST REGION OF ROMANIA

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Abstract

This paper analyzed the evolution of the cereal sector in the North-East Region of Romania, in the period 2015-2019. In order to carry out a more realistic study, a series of quantitative indicators specific to the cereal sector were analyzed. Also, the factors that directly influenced the results obtained in this sector were highlighted. In the North-East Region, the corn crop is on the first place in the ranking of cereal crops. This culture also holds a significant place at the macro-regional level. In 2019, in the North-East Region, 464,008 ha were cultivated with corn out of a total of 966,729 ha, cultivated in Macroregion Two, which represents 48%. A significant role in the economy of the cereal sector in the North-East region is played by the wheat culture. In this region, in 2019, 25.78% of the areas related to this cereal crop registered at the level of the Macroregion Two were cultivated. The largest productions were made at the corn crop. The productions made for this crop in 2019 were differentiated at the level of the counties in this region. The increase of the productivity of all medium and long-term cereal crops will be possible if farmers adopt an agriculture, in which new technologies will occupy a central place. The data used in the paper were collected from the National Institute of Statistics.

Key words: cereal area, cereal production, Romania, North-East Region

INTRODUCTION

The North-East development region of Romania (Figure 1) is located in the North-East part of the country, with an area of 3,684,983 hectares, which represents over 15% of the registered area at national level. This region consists of six counties, 506 communes and 2,414 villages. The counties that are found in this development region are: Bacău; Botoșani; Iași; Neamț; Suceava and Vaslui.

According to the published information, a series of economic activities are practiced in the rural area of the North-East development region, which have a special impact on the regional economy, as follows:

- cultivation of cereal, sugar beet and potatoes in most counties;
- pomiculture (Suceava, Iași, Neamț);
- viticulture (Bacău; Vaslui, Iași);
- livestock;

-wood exploitation and processing (Neamț, Bacău and Suceava).

-rural tourism (Neamț, Suceava and Bacău).

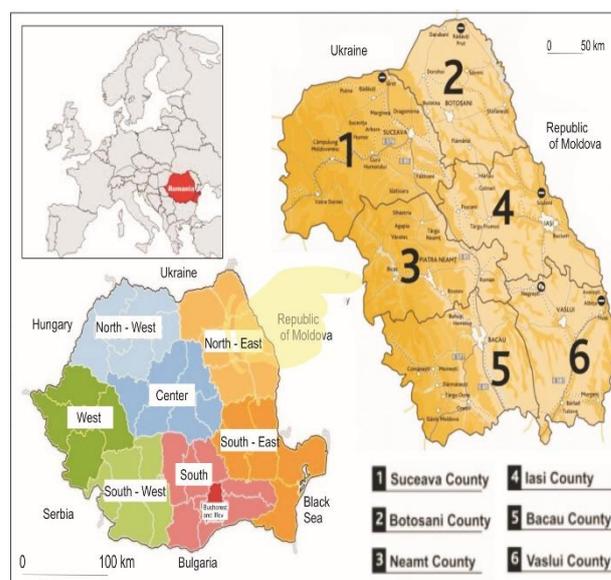


Fig. 1. Map of the North-East Development Region
Source: own processing from GIS open sources.

In the North-East development region, the cereal culture is present in all the component counties, but in different proportions. In this sense, according to statistical data, the most significant areas cultivated with grain cereals are found in the counties: Botoşani; Iaşi and Vaslui. Regarding the yields obtained for cereal crops, on the one hand, they varied from one year to another, and on the other hand they varied from one county to another. The change in cereal production was due to several factors, such as: organic; technological and ecological. Larger cereal products could be obtained if in this region the arrangements for irrigation were used at maximum. It should be noted that in the North-East region a little over 6% of the agricultural area has irrigation facilities [10, 16, 2, 1].

In this region, the cereal crop occupies important areas, because the soils here are suitable for such crops, but also because there is workforce for this sector. Cereals from this region, as well as from other development regions of Romania are sold both on the domestic market and on the foreign market [4, 5, 14, 17]. Cereals are so in demand because they represent the staple food for a large part of the world's population, being used in various forms. Another significant aspect is that cereals are the raw material for other sectors of activity, but also animal feed [6, 7]. In general, cereals have a number of characteristics that place them in the group of the most appreciated and valuable plants, because they represent the central support for human life and their activity. In this sense, it is important to mention the 1: 6 ratio between proteins and carbohydrates, which has a beneficial impact on the human body [9, 15]. Both at national and regional level, an important indicator for the agricultural sector is the value of agricultural production. At national level, in 2018, the value of agricultural production was 86.349 million lei (current prices). Higher values were recorded in the regions: South-Muntenia, South-East and North-East.

The North-East development region in 2018, is positioned on the 3rd place in terms of the value of agricultural production, namely, 13,652 million lei, of which: 9,092 million lei

for vegetal production and 4,475 million lei for animal production. The production of cereals also had a significant contribution in the vegetal production [12].

MATERIALS AND METHODS

The present research is focused on the evolution of the main cereal crops identified in the North-East region of Romania. The key indicators that were the basis for achieving the results in the cereal sector in this development region were analysed. In order to achieve the previously stated objective were analysed: areas cultivated with the main categories of cereals at the regional level, in the period 2015-2019; areas cultivated with corn in 2019, in the counties of the North-East Region; areas cultivated with wheat in the counties of the North-East Region, in 2019; cereal productions made at regional level during 2015-2019; corn production made in the counties of the North-East Region of Romania, in 2019; wheat production obtained in 2019, in the counties of the North-East Region.

The data processed in the paper were provided by the National Institute of Statistics through the Tempo online database, for the period 2015-2019.

In order to highlight, as concisely as possible, the research results were used to present them in graphic and tabular form.

RESULTS AND DISCUSSIONS

According to the data published by INS, in 2014 the agricultural area of the North-East Development Region was 2,124,775 ha, respectively 47.73% of the total registered by Macroregion Two. The largest areas were found in the counties: Vaslui (400,721 ha); Botoşani (392,761 ha) and Iaşi (381,256 ha), and the smallest in Neamţ County (281,649 ha).

Within the North-East Development Region, the arable area had the largest share (65%), ie 1,381,790 ha and was followed by pastures with 491,639 ha (23%). Vineyards and orchards recorded the lowest percentages, of 2% and 1%, respectively (Figure 2).

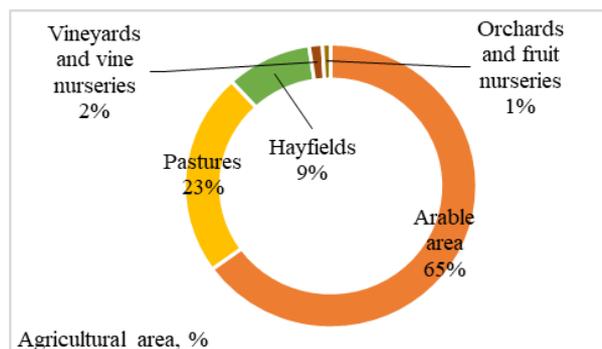


Fig. 2. Agricultural area of the North-East Development Region, by categories of use (%)

Source: Own processing based on NIS, Tempo On-line Database, 2020, [13].

By categories of land use, the largest areas were found as follows: arable (298,741 ha) in

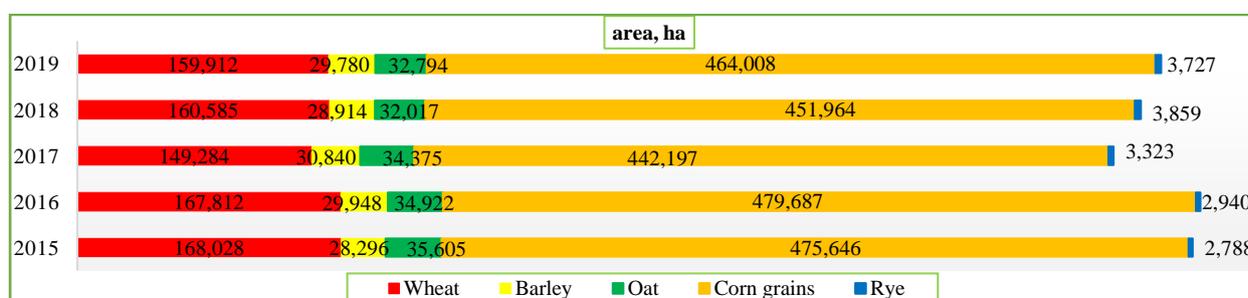


Fig. 3. Dynamics of cultivated areas with the main cereal crops in the North-East Development Region

Source: Own processing based on NIS, Tempo On-line Database, 2020, [13].

In 2019, compared to 2015, a differentiated evolution of the areas cultivated with cereals was noticed at the level of the North-East Development Region. There were decreases for the areas cultivated with corn, wheat and oats, and the largest percentage decrease was being recorded for oat, of 7.89% (Table 1). Unlike the previously mentioned decreases, there were also increases of the cultivated areas with barley by 5.24%, in 2019, compared to 2015. Also for the same analysis period, there was an increase of the cultivated areas with rye 33.68%. Another significant aspect is represented by the fact that the surfaces cultivated with cereals in the North-East Region underwent significant mutations in the analysed period compared to 1990, according to the published statistical data. For example, in 2019, compared to 1990, the following changes were found: the areas cultivated with corn and oat increased by 22.73% and 128.07%, respectively, while for wheat and barley the cultivated areas

Botoșani county, pastures (90,512 ha) in Suceava county; hayfields (74,179 ha) in Suceava County; vineyards and vine nurseries (11,679 ha) in Iași county and orchards and fruit nurseries (6,783 ha) in Iași county.

From the presented statistical data, it is found that, among the field crops, the most cultivated cereal in the period 2015-2019, in the North-East Development Region was the corn for grains. It registered the largest area in 2016, of 479,687 ha. In the top of cereal crops in this region are positioned the following crops such as: wheat (168,028 ha in 2015); oat (35,605 ha in 2015); barley (30,840 ha in 2017) and rye (3,859 in 2018) (Figure 3).

decreased by 52.97% and 53.07%, respectively. These changes were caused by a number of endogenous and exogenous factors.

Table 1. Areas cultivated with main cereals, 2015-2019 (ha)

Specification	2015	2016	2017	2018	2019	2019/2015 %
Corn	475,646	479,687	442,197	451,964	464,008	97.55
Wheat	168,028	167,812	149,284	160,585	159,912	95.17
Oat	35,605	34,922	34,375	32,017	32,794	92.11
Barley	28,296	29,948	30,840	28,914	29,780	105.24
Rye	2,788	2,940	3,323	3,859	3,727	133.68

Source: Own calculation based on NIS, Tempo On-line Database, 2020, [13].

An important role in substantiating the decisions of the main economic agents operating in the cereal sector both at regional and national level, was played by exogenous factors [3]. Among them it is necessary to mention: the demand for certain categories of cereals manifested on the market; competitive pressure and commercial practices specific to

this sector of activity; market situation; the size of the subsidies; legal and economic framework, etc.

In 2019, within the North-East Development Region, 48% (464,008 ha) of the total areas established with corn in Macroregion Two (966,729 ha) were cultivated. This culture was found in all the counties that make up the North-East Development Region (Figure 4), but in Botoșani County the largest area was found, of 108,669 ha. At the opposite pole was Suceava County, with 37,759 ha.

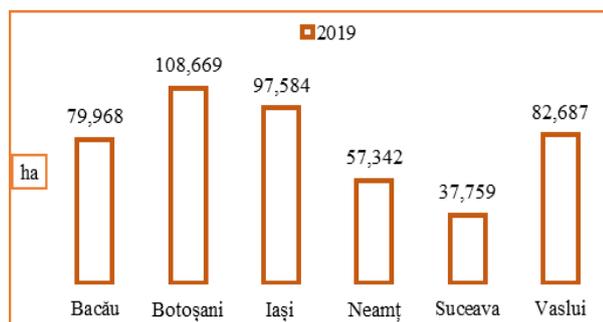


Fig. 4. Areas cultivated with corn for grain in the counties of the North-East Development Region
 Source: Own processing based on NIS, Tempo On-line Database, 2020, [13].

Compared to 1990, NIS showed that the areas cultivated with corn for grain increased in all 6 mentioned counties, on average, by 30% (Figure 4). For wheat cultivation, the situation was as follows in 2019: in the North-East Development Region, 25.78% (159,912 ha)

were cultivated, out of the total areas established with wheat in Macroregion Two (620,334 ha). The counties with the largest areas were Vaslui (36,687 ha) and Iași (36,018 ha), and the smallest areas were found in Bacau County (15,371 ha) (Figure 5).

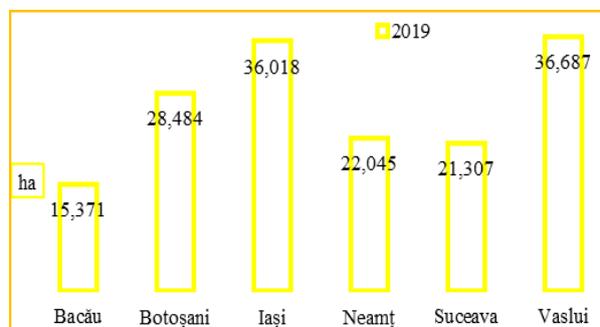


Fig. 5. Areas cultivated with wheat in the counties of the North-East Development Region
 Source: Own processing based on NIS, Tempo On-line Database, 2020, [13].

From the analysis of the data presented by NIS, compared to 1990, for the wheat crop, the areas established with wheat in the 6 counties of the North-East Development Region decreased, on average, by 50%.

Figure 6 shows the productions obtained for the main cereal crops established in the period 2015-2019. For 2019, the following were obtained: 2,683,185 tons of corn grains; 644,769 tons of wheat; 91,546 tons of barley; 67,170 tons of oat and rye 10,700 tons.

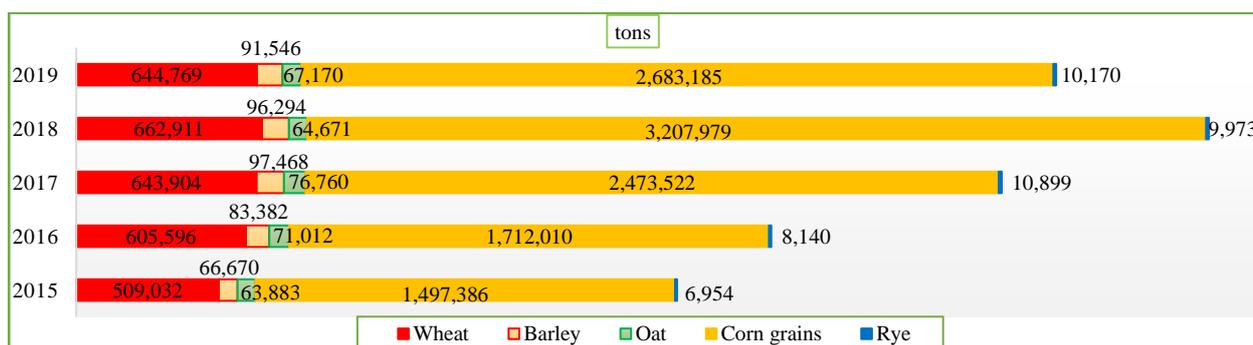


Fig. 6. Dynamics of productions obtained for the main cereal crops in the North-East Development Region;
 Source: Own processing based on NIS, Tempo On-line Database, 2020, [13].

The year 2018 meant for corn grains and wheat the obtaining of the largest productions in the analysed period, as follows: 3,207,979 tons for corn grains and 662,911 tons for wheat. For oat and barley, in 2017 reference productions were made for the period 2015-

2017. Thus, 97,468 tons of barley and 76,760 tons of oat were harvested. For the rye crop, a maximum production was reached, also in 2017, of 10,899 tons.

In the productions obtained in 2019, there were increases for all important cereal crops,

compared to 2015 (Table 2). The highest increase was registered for corn, of 79.19%, and the lowest for oat, of 5.15%.

Table 2. Productions obtained for the main cereal crops, 2015-2019 (tons)

Specification	2015	2016	2017	2018	2019	2019/2015 %
Corn	1,497,386	1,712,010	2,473,522	3,207,979	2,683,185	179.19
Wheat	509,032	605,596	643,904	662,911	644,769	126.67
Oat	63,883	71,012	76,760	64,671	67,170	105.15
Barley	66,670	83,382	97,468	96,294	91,546	137.31
Rye	6,954	8,140	10,899	9,973	10,170	146.25

Source: Own calculation based on NIS, Tempo On-line Database, 2020, [13].

In order to highlight as well as possible, the evolution of cereal productions in the North-East region, it is necessary to specify a positive aspect, namely, that there were significant increases in 2019 compared to 1990: corn and oat. These increases in production were mainly due to: the application of modern cultivation technologies and the use of qualitative varieties and hybrids. For wheat and barley, the productions decreased by 34.70%, respectively 52.15%, simultaneously with the decrease of cultivated areas [13].

In the period 2015-2019, cereal crops benefited at national level from a series of forms of support that stimulated the economic agents in the cereal sector. The main forms of support were: direct payment schemes; transitional national aid; state aid for the gasoline used in agriculture [11]. The main forms of support granted at national level, together with the direct contribution of endogenous factors, have led, on the one hand, to the increase of the surfaces afferent to the cereal crops, and on the other hand, to the increase of the realized yields. Among the contributing endogenous factors in this sector we mention: equity; the level of qualification of the personnel from agriculture; technical equipment; modern production technologies; farm management, etc. [3].

In 2019, the productions of corn grains within the counties afferent to the North-East region registered different values. The most significant production was registered in Botoșani county (656,634 tons), and the

lowest was registered in Suceava county (213,450 tons) (Figure 7). In 2019, in Botoșani County, 24.47% of the total production achieved in the North-East region was achieved.

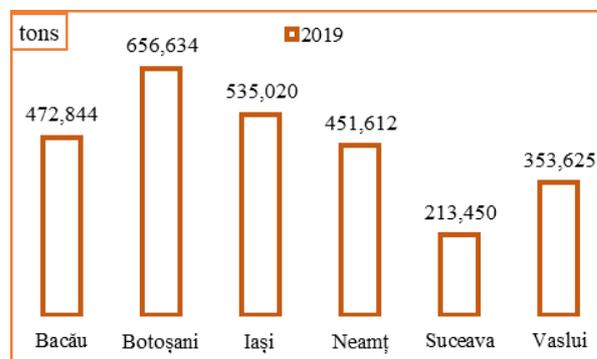


Fig. 7. Obtained productions of corn grains in the counties of the North-East Development Region

Source: Own processing based on NIS, Tempo On-line Database, 2020, [13].

The wheat productions realized in the counties from the North-East region varied between 59,109 tons-146,955 tons, in 2019 (see Figure 8). From the statistical data presented and analysed it emerged that Iasi County achieved the highest wheat production, of 146,955 tons, representing 22.79% of the production achieved in the North-East region.

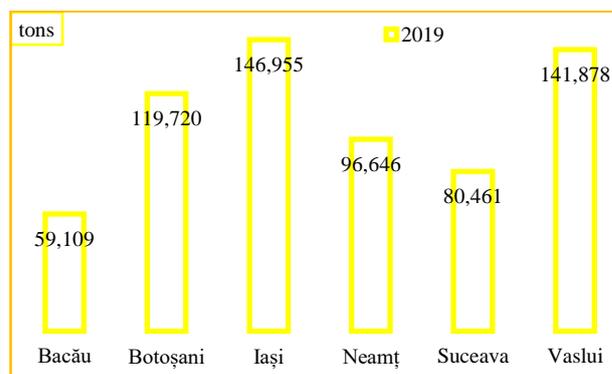


Fig. 8. Obtained productions of wheat in the counties of the North-East Development Region

Source: Own processing based on NIS, Tempo On-line Database, 2020, [13].

Currently, both nationally and regionally, economic agents in the cereal sector want an upward trend in productivity, due to the growing demand both domestically and externally. In order to achieve this goal, there is now a huge opportunity for Romanian farmers, namely, the practice of "precision

agriculture". This type of agriculture is in fact an innovative agriculture that is mainly based on the application of new technologies.

The practice of this type of agriculture presents a series of advantages for the farmers in the cereal sector such as: the efficient use of all the production factors used; cost reduction; profit increase, etc. [8]. It is necessary to emphasize the fact that the practice of this type of agriculture presents a major disadvantage, namely, the high prices for the new technologies. In this context, farmers will be aware of the need for association in agriculture, in order to adapt more easily to market requirements.

CONCLUSIONS

Going through the information presented in the paper, regarding the cereal sector in the North-East development region of Romania, a series of conclusions were drawn:

- Grain corn ranks first in cereal crops. The area cultivated with corn reached a maximum point in 2016 (479,687 ha);
- In 2019, compared to 2015, there was a small decline in areas cultivated with corn. These areas decreased by 2.45%;
- In opposition with corn was the area cultivated with rye. It registered the smallest area, of 2,788 ha (2015). However, in 2019, there was an increase in area by 33.68%, compared to 2015;
- Corn cultivation is present in all counties within this region, but in different proportions. Thus, at the level of 2019, Botosani county registered the largest cultivated area with corn, of 108,669 ha. The smallest area with corn, also for 2019 was registered in Suceava County (37,759 ha);
- The areas cultivated with wheat in the counties from this region, in 2019, varied between 15,371 ha (Bacau) - 36,687 ha (Vaslui);
- Regarding the areas cultivated with wheat in 2019, compared to 1990, in the counties in this region, there was a decrease, on average by 50%;
- The productions made for the main cereal crops varied during the analysed period. The most significant productions were registered

in 2018, for corn grains (3,207,979 tons) and for wheat (662,911 tons);

-In 2019, there was an increase in grain production by 79.19, compared to 2015;

-The lowest yields were recorded for rye culture. This ranged from 6,954 tons (2015) - 10,899 tons (2017);

-Botosani County, in 2019, ranked first in the production of corn made with 656,634 tons, respectively 27.47% of the total production made in the North-East region;

-Iasi County achieved the highest wheat production (146,955 tons) in 2019, compared to the rest of the counties in the North-East region.

In order to increase the competitiveness of the cereal sector in the North-East Region of Romania, it is necessary for farmers in this sector to turn more and more to the practice of a modern agriculture, in which the use of new technologies is the key element.

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