THE CONTRIBUTION OF THE MEMBER STATES TO THE CONSOLIDATION OF THE EU'S ROLE ON THE CEREALS MARKET, IN THE CONTEXT OF THE CURRENT GEOPOLITICAL INSTABILITY

Irina-Adriana CHIURCIU, PhD in agronomy, USAMV Bucharest
https://orcid.org/0000-0002-9677-6836, chiurciu.irina@managusamv.ro
Ion CERTAN, PhD in economics, USAMV Bucharest
https://orcid.org/0000-0003-0475-2042, ion.certan@qlab.usamv.ro
Toma-Adrian DINU, PhD in agronomy, USAMV Bucharest
tomadinu@managusamv.ro
Elena SOARE, PhD in economics, USAMV Bucharest
soare.elena@managusamv.ro
Paula Stoicea, PhD. in Agronomy, USAMV Bucharest
stoicea.paula@managusamv.ro

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Summary

In the conditions of the current geopolitical instability, the EU is strengthening its position on the world grain market. The study captures the evolution of the cultivated areas with wheat and corn, the harvested productions obtained in the period 2015-2021, as well as the yields, through the lens of the EU member states.

For the analysis, was processed data provided by the official statistics website of the EU - Eurostat, by the General Directorate of AGRI, Agriculture and Rural Development, as well as by the Romanian Ministry of Agriculture and Rural Development.

At the level of 2021, in terms of the cultivated areas, France was ranked first in terms of wheat, with 5,277.05 thousand ha, followed by Germany - 2,939.00 thousand ha, Poland 2,390.52 thousand ha and Romania - 2,151.19 thousand ha, while for corn Romania was the leader with 2,572.56 thousand ha, followed by France - 1,547.12 thousand ha and Hungary with 1,043.11 thousand ha. In terms of harvested productions, the ranking is the following: for wheat in first place - France, with 36,607.12 thousand tons, followed by Germany - 21,459.20 thousand tons, Poland with 11,893.55 thousand tons, and Romania - 11,386.41 thousand tons, while for corn France ranked first, with 15,285.68 thousand tons, followed by Romania - 15,186.12 thousand tons and Poland - 7,321.91 thousand tons.

The study will be finalized with a series of conclusions and recommendations regarding the prospects of the sector at the European level and the role of each individual member state.

Keywords: *wheat, corn, cultivated area, harvested production, efficiency.*
JEL: *Q10*
UDC: *338.439.5:633.1*

Introduction. Cereals have been a basic food for the world's population since ancient times, the first attestations dating back to 6000-5500 B.C. (Pânzaru et al., 2018).

Grains have many properties that are very important for human survival, activity and health, namely: a 1:6 ratios between proteins and carbohydrates, which is very beneficial for the human body, they contain dextrose, which is used in dietary nutrition, providing about 65% of daily calories and 45% of proteins (Cofas & Soare, 2013).

World consumption of oilseeds has increased in recent years due to population growth. At the same time, worldwide, there is a gap between the supply and demand of cereals between developed and developing countries. In this sense, the European Union plays a crucial role, providing about one fifth of the world's total production. The growing preference for the production of cereals, which accounts for about 31% of total global consumption, is due to the strong ecological plasticity and the annual yields of plants producing large crops in a relatively short period of time compared to the units of the surface (Gimbasanu & Tudor, 2019). Trade in cereals on international markets is negatively affected by global and European geopolitical instability, as well as by global warming and pollution, those mentioned above, leading to the global food crisis that is looming (Tobias, 2022).

At present, food producers are confronted with the needs of European consumers, the mechanism of the common agricultural policy, European rules and standards, etc. which can be addressed through four major lines of action: solidarity, sustainable production, trade, multilateralism (Dona & Mătusa (Dumitru), 2012; MADR, 2022).

Degree of approach of the topic in scientific literature. Ion (2010) in his paper entitled Fitotehnie / Phytotechnics, defines grains as crops of great importance, both for human and animal nutrition and for industry. Information about cereals can be found in various studies, carried out in most regions of the world, both from a technological point of view (Cofas & Soare, 2013), food (Pânzaru et al., 2018) and from the perspective of economic indicators and social effects (Grab, 2021; Plant, 2022; Popescu et al., 2018). The differences reported spur decision-makers in the cereal sector to act differently from one region to another. In this context, the countries of the European Union are currently coordinating, through the conclusions of the Council, agreed in June 2022, a series of actions to help their own population and also those in the regions heavily affected by disasters and geopolitical instability.

It should be noted that information such as cultivated areas, obtained cereals, etc. can be found on the sites of the European Union, where a series of official, analytical documents on the mode of action, strategies, policies, as well as related statistical data are published.

Research Methodology. The statistical data underlying the realization of this research was provided by the EU - Eurostat, by the DG for Agriculture and Rural Development, as well as by the Romanian Ministry of Agriculture and Rural Development. The main indicators considered in order to achieve the cereals market analysis were: the total production of wheat and maize obtained in the main producing states, worldwide; the area cultivated with wheat and maize in the EU Member States, the total production and the yield obtained from these crops. To highlight the essential aspects of the cereals market in EU studies, journals and specialty books were consulted.

Main results. Common Agricultural Policy (CAP) of the EU passed, within the last twenty years, through successive reforms aiming agricultural production, especially related to cereals, in terms of market orientation, market share and price adjustment towards the world ones. To analyse the contribution of each member states we have to consider the role in the place of EU within the world cereals market through total wheat and maize production in the main producing states.

Table 1. **Total wheat production in the main producing states, worldwide, million tons**

Specification	**2019/2020**	**2020/2021**	**2021/2022**	**2022/2023 forecast**
World	760.7	774.3	781.0	778.0
*EU – 27**	*155.0*	*125.7*	*138.3*	*132.0*
China	133.6	134.3	136.9	138.0
India	103.6	107.9	109.6	105.0
Russia	73.6	85.4	75.0	87.6
USA	52.6	49.8	44.8	48.5
Canada	32.7	35.2	21.7	33.0
Ukraine	29.2	25.4	33.0	19.4
Australia	14.5	33.3	36.3	31.0

**including UK up to 2020*
Source: (European Commission, 2022)

We note that EU stands first worldwide in terms of total wheat production (Table 1), despite the fact that it fluctuated during the period under review. The forecast for the 2022/2023 agricultural year shows a decrease of about 5% compared to the similar period, while the total production will increase by 1%. At the same time, we mention the constant growth trend recorded by China by about one million tons per year, which will allow it to dethrone the EU in the near future.

The current geopolitical instability can be easily observed by the evolution of Russia on the grain market, characterized by oscillations of plus/minus 12,000,000 tons from year to year, which could be dependent on climatic conditions. Simultaneously, Ukraine will record the lowest level of production in the analyzed period and it will represent only 60% compared to the previous year (2021/2022). At the level of the 2021/2022 agricultural year, the total EU wheat production accounted for 17.71% of the world's production.

Global maize production, presented in Table 2, indicates the following: first place is occupied by the USA, followed by China and Brazil, while the EU ranks 4th, with a production about six times lower than that of the United States in the period under review.

Table 2. **Maize production in the main producing countries, worldwide, million tons**

Specification	2019/2020	2020/2021	2021/2022	2022/2023 forecast
World	1,131.4	1,136.1	1,219.5	1,178.6
USA	346.0	358.4	383.9	364.7
China	260.8	260.7	272.6	273.0
Brazil	102.5	87.1	114.7	123.1
EU	*68.1*	*68.0*	*70.3*	*59.6*
Argentina	58.4	60.5	57.0	60.6
Ukraine	35.9	30.3	42.1	27.7
Russia	14.3	13.9	14.6	14.6

**including UK up to 2020*
Source: (European Commission, 2022)

At the level of the 2021/2022 agricultural year, EU maize production accounted for 5.76% of the world production. The forecast for the agricultural year 2022/2023 shows a decrease in maize production for the EU, while an increase is expected worldwide and for the top three countries.

Figure 1 shows the yields recorded on cereals by the main types cultivated in the EU (common wheat, maize and barley), for the period 2019/2021 and forecast for 2022/2023. As it can be seen, common wheat has the highest yield and the forecast for 2022/2023 is 126 million tonnes. We note that, in all the categories analysed, compared to the previous year, the forecasts for 2022/2023 indicate a decrease in the obtained crops.

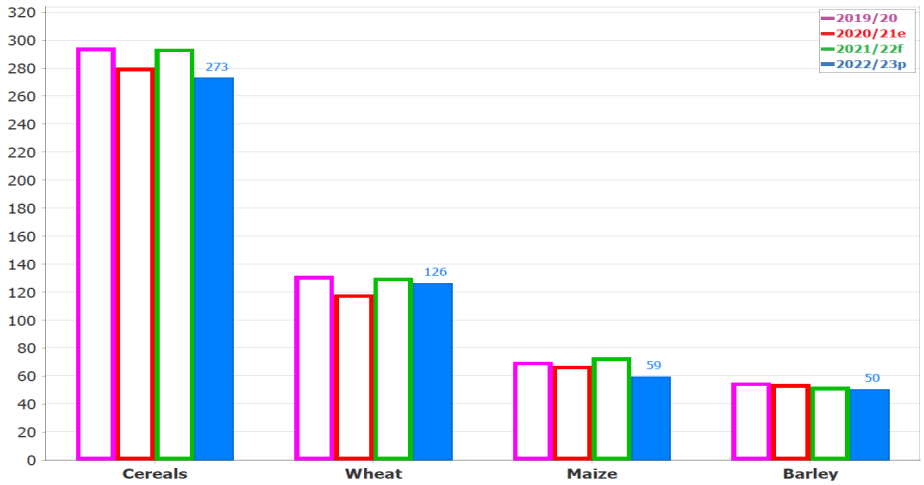

Figure 1. **Registered production for the main cereals grown in the EU, million tons**
Source: (European Commission -DG AGRI, 2022)

In the EU, the main cultivating states of total wheat are France – 5,277.05 thousand ha, Germany – 2,939.00 thousand ha, Poland – 2,390.00 thousand ha and Romania - 2,151.19 thousand ha, in 2021 (Figure 2).

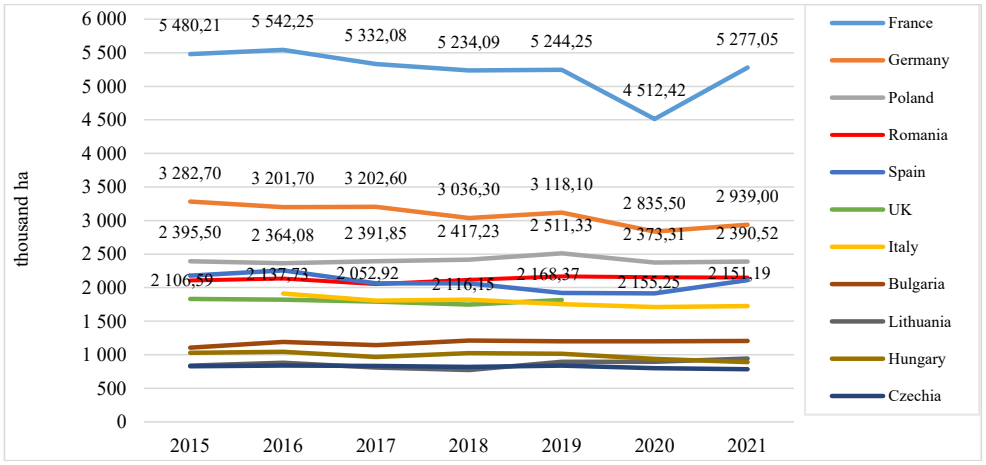

Figure 2. **Evolution of wheat areas in the main growing states of the EU, thousand ha**

Source: (Eurostat, 2022, processed by authors)

Except for Romania, Bulgaria and Lithuania, which recorded increases of the conquered areas of 2.12%, 9.07%, respectively 12.91%, in 2021, compared to 2015, in the other states were reported decreases: France – 3.71%, Germany – 10.47%, etc. the highest being 13.48% for Hungary. At the level of 2021, the areas cultivated with wheat were distributed as follows: France – 26%, Germany – 14%. Poland – 12%, Romania – 11%, etc. which means that the first states in the ranking held more than 50% of the EU area for total wheat.

The largest total wheat producers in the EU are, in order, France – 36,607.12 thousand tons, Germany – 21,459.20 thousand tons, Poland – 11,893.55 thousand tons and Romania – 11,386.41 thousand tons, in 2021 (Figure 3).

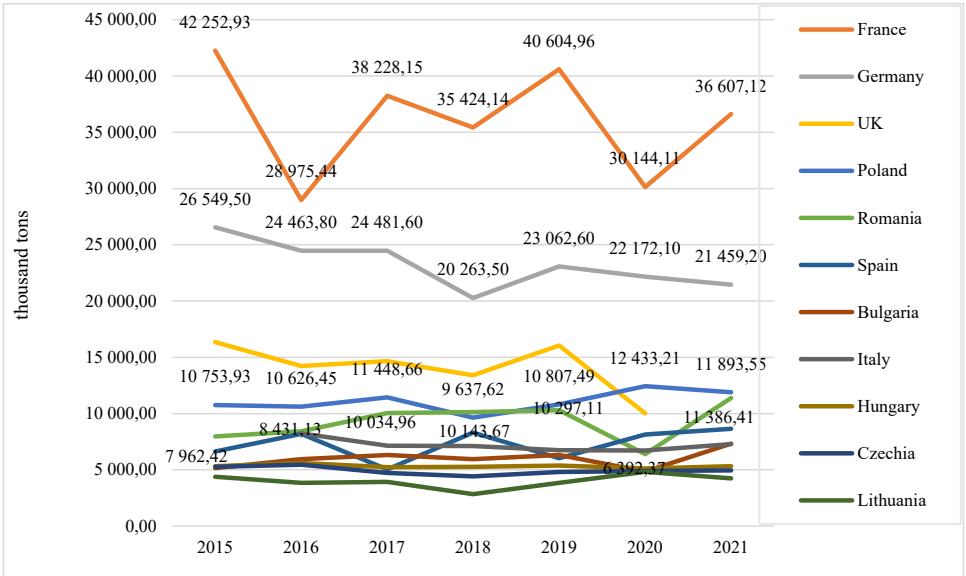

Figure 3. **Development of wheat production in the main EU producer countries, thousand tons**

Source: (Eurostat, 2022, processed by authors)

For the analyzed period, 2015-2021, there were both increases and decreases in production. Increases were reported for Poland, Romania, Spain and Bulgaria, the highest being obtained by Romania – 43% and then by Bulgaria – 42.53%, which corresponds to the increases of the areas cultivated in these countries (Figure 2). For the other states there were decreases: France – 13.36%, Germany – 19.17%, which held the highest value, etc. Over 50% of the total wheat production of 2021 was obtained by the first states in the ranking, as follows: France – 31%, Germany – 18%, Poland – 10% and Romania – about 10%, etc.

Table 3 shows the yield for total wheat obtained in the main EU producer countries (tons/ha). The data available on the Eurostat website indicate the countries with the highest values for this indicator. We notice in 2021, on the 1st place, Ireland – 10.05 tons/ha, followed by Belgium – 7.80 tons/ha. The main producers of total wheat, France, Germany, Poland and Romania ranked 6th, 5th, 18th and 17th, respectively. For the analyzed period, 2015-2021, there were both increases and decreases in the wheat yield.

Table 3. **Yield for wheat obtained in the main EU producer states, tons/ha**

	Specification	2015	2016	2017	2018	2019	2020	2021	2021/2015,%
1	Ireland	10.00	8.99	9.46	8.37	9.38	7.76	10.05	100.50
2	Belgium	9.33	6.64	8.56	8.49	9.33	8.95	7.80	83.60
3	Netherlands	*	7.84	*	8.62	9.38	8.56	*	0
4	Denmark	*	7.12	8.15	6.16	8.10	8.10	7.53	0
5	Germany	8.09	7.64	7.64	6.67	7.40	7.82	7.30	90.23
6	France	7.71	5.23	7.17	6.76	7.75	6.68	7.23	93.77
7	Slovakia	5.50	*	4.74	4.77	4.81	5.52	*	0
8	Croatia	5.36	5.70	5.87	5.44	5.59	5.87	6.70	125.00
9	Czechia	6.36	6.50	5.67	5.39	5.73	6.14	6.32	99.37
10	Sweden	7.22	6.33	6.99	4.35	7.41	7.16	6.31	87.40
11	Bulgaria	4.65	4.98	5.52	4.91	5.27	4.01	6.07	130.54
12	Hungary	5.18	5.37	5.43	5.12	5.30	5.47	5.97	115.25
13	Luxembourg	6.35	5.08	5.49	6.19	6.16	6.07	5.92	93.23
14	Slovenia	5.11	5.19	5.03	4.38	5.23	5.80	5.77	112.92
15	Switzerland	6.06	4.42	6.17	5.72	5.82	6.29	5.74	94.72
16	Austria	5.67	6.18	4.82	4.64	5.74	5.93	5.53	97.53
17	Romania	3.78	3.94	4.89	4.79	4.75	2.97	5.29	139.95
18	Poland	4.48	4.46	4.79	3.98	4.31	5.24	4.98	111.16
19	Lithuania	5.26	4.37	4.82	3.67	4.29	5.39	4.50	85.55
20	Latvia	5.03	*	4.79	3.43	4.81	5.34	4.48	89.07
21	Italy	*	4.31	*	*	*	3.92	4.22	0
22	Estonia	4.79	2.77	4.20	2.91	5.07	5.00	4.09	85.39
23	Spain	3.05	3.63	2.44	4.03	3.15	4.25	4.09	134.10
24	Finland	4.16	3.88	4.18	2.82	4.62	3.46	3.23	77.64
25	Greece	2.44	3.10	2.46	2.65	2.79	3.08	2.71	111.07
26	Portugal	2.09	2.44	2.13	2.59	2.70	2.77	2.42	115.79
27	Cyprus	3.01	0.85	1.97	1.50	2.78	2.58	2.02	67.11

*data not available

Source: (Eurostat, 2022, own calculation)

In 2021, the main corn-growing states in the EU (Figure 4) were Romania – 2,572.56 thousand ha, France – 1,547.12 thousand ha, Hungary – 1,043.11 thousand ha and Poland – 998.47 thousand ha. For the analyzed period, 2015-2021, there were both increases and decreases in the areas cultivated with corn. Increases were reported for: Poland – 48.96%, Bulgaria – 14.92% and the highest for Lithuania – 52.60%. Decreases were recorded in: Romania – 1.36%, France – 5.5% and Denmark – 71.1% the most.

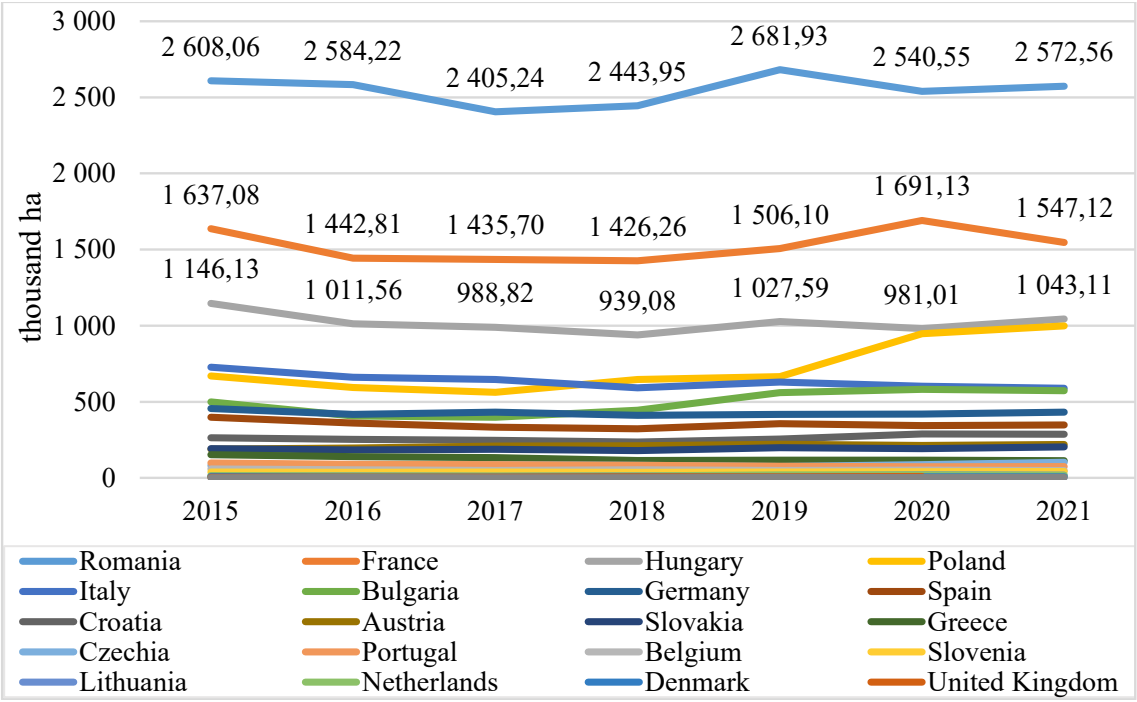

Figure 4. **Evolution of maize areas in the EU states, thousand ha**
Source: (Eurostat, 2022, our design)

At the level of 2021, the areas cultivated with wheat were distributed as follows: Romania – 28% France – 17%, Hungary – 11%. Poland – 11%, etc., which means that the first states in the ranking have owned more than 50% of the EU surface dedicated to corn.

The largest maize producers countries in the EU are, in order, France – 15,285.68 thousand tons, Romania – 15,186.12 thousand tons, Poland – 7,321.91 thousand tons and Hungary – 6,264.74 thousand tons, year 2021 (Figure 5).

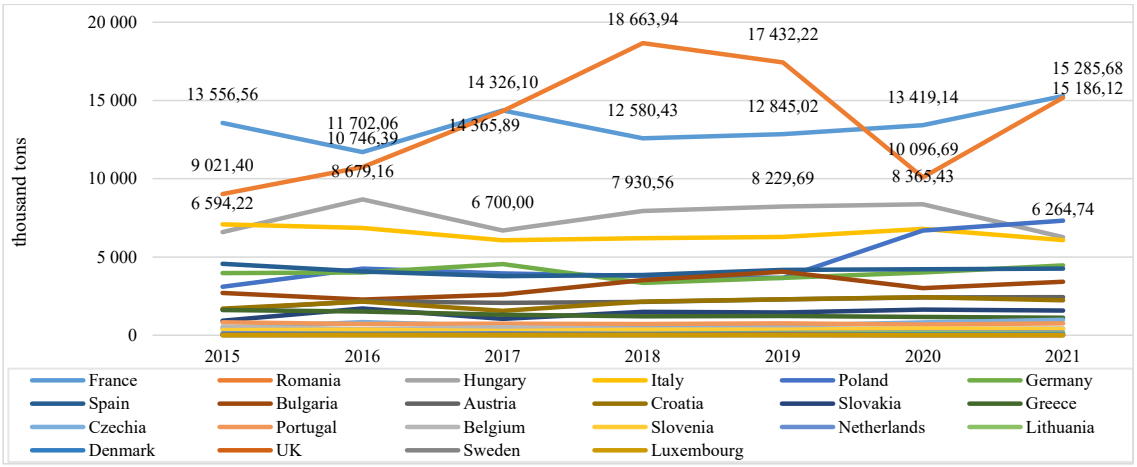

Figure 5. **Development of maize production in the main EU producing States, thousand tons**

Source: (Eurostat, 2022, our design)

For the analyzed period, 2015-2021, there were both increases and decreases in production. Increases were reported for Romania, France and Poland, the highest being obtained by Romania – 81.5%, Poland – 22% and France – 13.5%, while Hungary registered a slight decrease of about 15%.

From the point of view of efficiency (Table 4), we note, that Romania (the 2nd corn producer in the EU) is on the penultimate place of the ranking in terms of the yield obtained. Romania had a minor advantage over Lithuania in 2021, but the yield obtained was only 48% of the one of Spain (12.29 tons/ha), the country that occupied the first place for this category.

Table 4. **Yield for maize obtained in the main EU producer states, tons/ha**

	Specification	2015	2016	2017	2018	2019	2020	2021	2021/2015 %
1	Spain	11.46	11.33	11.32	11.92	11.73	12.26	12.29	107.24
2	Austria	8.68	11.16	9.91	10.15	10.42	11.35	11.16	128.57
3	Germany	8.88	9.65	10.53	8.14	8.81	9.59	10.36	116.67
4	Italy	10.47	10.38	9.88	10.13	10.05	11.27	10.33	98.66
5	Portugal	8.45	8.02	8.61	8.56	9.80	9.35	10.10	119.53
6	Greece	10.59	10.84	9.86	10.63	10.68	10.09	10.09	95.28
7	Netherlands	8.30	6.46	10.16	6.49	7.80	8.54	9.96	120.00
8	France	8.28	8.11	9.97	8.79	8.48	7.93	9.88	119.32
9	Czechia	5.54	9.79	6.84	5.98	8.29	9.46	9.65	174.19
10	Slovenia	8.97	9.51	7.11	9.45	9.27	10.79	9.39	104.68
11	Belgium	9.40	7.47	10.28	7.00	8.83	8.11	9.15	97.34
12	Sweden	5.76	8.03	7.33	4.18	6.96	6.77	8.60	149.31
13	Croatia	6.50	8.50	6.30	9.13	9.01	8.43	7.77	119.54
14	Slovakia	5.47	7.76	5.61	8.41	7.39	8.29	7.77	142.05
15	Poland	4.62	7.15	7.02	5.88	5.52	7.08	7.33	158.66
16	Denmark	6.13	7.59	7.54	5.63	7.56	6.25	7.07	115.33
17	Luxembourg	5.36	5.45	7.00	5.07	4.62	5.49	6.41	119.59

18	Hungary	5.75	8.58	6.78	8.44	8.01	8.53	6.01	104.52
19	Bulgaria	5.43	5.60	6.56	7.92	7.24	5.18	5.99	110.31
20	Romania	3.46	4.16	5.96	7.64	6.50	3.97	5.90	170.52
21	Lithuania	4.81	6.94	5.74	6.54	7.67	7.01	5.86	121.83

Source: (Eurostat, 2022, own calculation)

At the same time, Romania recorded the second highest increase (70.52%) after the Czech Republic (74.19%), followed by Poland (58.66%) and Sweden (49.31%).

Discussion of the results, conclusions. Cereals are and will be the staple food for most of the world's population, which is fast approaching 8 billion. In this context, important players envisage different ways to increase cereal production and expand market share. The European Union makes no exception and is trying to maintain its leader position in the wheat sector and to strengthen its presence on the world market for maize. Of course, the limited circulation and disruptive impact of the COVID-19 pandemic on major food producing countries such as France, Germany, Italy, Spain, etc. had a negative impact on the total production and efficiency of the measurement unit.

Another concern is that extreme weather events exacerbated by climate change may lead to greater volatility of food production, affecting global supplies and prices, which will seriously affect this year's production due to record temperatures in the last months of summer and, subsequently, unprecedented droughts on the one hand and catastrophic floods on the other.

The current geopolitical instability has the potential to lead to major changes in the structure of exporting countries in the medium term, which will have the following regional implications:

- The current macroeconomic environment is a source of uncertainty. Cereal prices could be affected by a potential economic downturn due to lower investment, especially in fast-growing economies,
- World food markets remain uncertain due to inflationary pressures and real exchange rate movements, especially in exporting countries,
- Energy prices may directly affect the prices of inputs such as fertilisers and agrochemicals,
- Political environment will matter. Increased food security, a focus on the sustainability of future reforms (EU) and the development of biofuel policy (EU, Brazil and US) will affect food demand,
- Crop pests, crop diseases and animal diseases remain factors that could disrupt food supply and demand.

At the same time, the structure of the wheat and maize areas in the member countries will remain approximately similar, with a focus on expanding the irrigated areas, implementing precision agriculture, combating pests through natural enemies, developing new varieties that can withstand changing climatic conditions, etc.

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