

# Agricultural Production of Galati County. Aspects Related to Grain Crops

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ARTICLE INFO	ABSTRACT
<p><i>Article history:</i> Accepted July 2024 Available online August 2024</p> <p><i>JEL Classification:</i> O13, Q15</p> <p><i>Keywords:</i> agriculture, grain crops, Galați County</p>	<p>Agriculture represents an important economic sector, which provides food for human society. Galați is a county with high agricultural potential, due to its valuable natural resources, tradition, specialized workforce, and agricultural education provided by educational institutions in the region. The research carried out forwards an analysis of vegetable crops, with an emphasis on cereal crops. The bibliographic documentation was carried out using institutional access to scientific articles in the Clarivate, SCOPUS, Google Scholar, and ResearchGate databases. For the applied part we used official information provided by the National Institute of Statistics, the Directorate for Agriculture of Galati County, and the Ministry of Agriculture and Rural Development. The data collected were processed, graphed, and commented on. The results of the research highlighted important progress in the quantities of harvested grains, based in particular on the increase in crop productivity, but also a strong dependence on weather conditions, especially rainfall. The agriculture of Galati County requires important investments in the agricultural field, especially in mechanization and irrigation system development.</p> <p>© 2024 JARDS. All rights reserved.</p>

## 1. Introduction

In the wake of climate changes, the demographic growth of the planet's population, and the occurrence of critical incidents of a biological nature, such as COVID-19 or conflicts like Russia's aggression against Ukraine, ensuring the population's food security has become a priority of national and global policies. Agriculture is a strategic field of the world economy, emphasized by European strategies and the Common Agricultural Policy (CAP). Primary agricultural production impacts the environment, serves as a main food source for the population, produces raw materials for industry, and generates economic income and jobs directly and in related fields.

Romania is one of the most important agricultural producers in Europe. The agricultural sector continues to play a particularly significant role and has undergone a restructuring process, with changes in ownership and the exploitation system.

## 2. Materials and methods

The bibliographic documentation for the study used scientific papers and works from Web of Science – Clarivate Analytics, SCOPUS, Google Scholar, and ResearchGate.

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Information on Galati County's agriculture in a regional and national context was collected from official statistics provided by the National Institute of Statistics (NIS), the Directorate for Agriculture of Galati County (DAG), and the Ministry of Agriculture and Rural Development (MADR). The data were processed using tabulation methods and represented graphically. The results were analyzed and validated by comparing them with other scientific publications in the literature, underscoring the pride we can take in our agricultural sector.

## 2. Literature review

The role of agriculture in the Romanian economy is undeniably significant, considering the share of the rural population and the employment rate. Approximately 45% of the Romanian population lives in rural areas, surpassing the 23.6% average of the European Union member states (The Galați County Council, 2021).

In the context of Agricultural Production of Galati County: Aspects Related to Grain Crops, it is crucial to note that grain crops play a pivotal role in the county's agricultural output, contributing significantly to local and national food security. The county's climate and soil conditions are particularly conducive to grain cultivation, making it a key area for cereal production in Romania. However, integrating modern agricultural practices and technologies is not just a choice but a necessity to further enhance the efficiency and output of grain farming in Galati County, aligning with broader agricultural policies and economic goals. The information was processed using tabulation methods and represented graphically. The results were analyzed. For validation, the results were compared with other scientific publications from the literature, highlighting the urgency of this need. A fundamental feature of the Romanian agri-food sector is the fact that although the high natural potential can ensure the internal need for basic food for a much larger population than the one currently inhabiting the country, the domestic food market is dependent on food imports, mostly from the European Union (EU), which under normal conditions should only be a source of supplementing and diversifying the population's consumption, covering products that cannot be grown in Romania due to the climatic conditions.

Romania has the sixth largest used agricultural area among European countries and is ranked in the Top 10 world exporters of wheat and corn. Output is still low compared to its natural potential, the sector being affected by a low degree of mechanization, the insufficiency of irrigation systems, the fragmentation of agricultural property, the lack of capital, and the poor professional education of agricultural workers. About 60% of Romania's farmed agricultural area (8.2 million ha) is arable land, and of this area, about two-thirds are used for cereal crops (profit. ro, 2023)

In Romania, the main crops are represented by cereals (wheat, corn, barley), the total quantities obtained in 2022 are shown in Table 1.

**Table 1. Grain crop production in Romania in 2022**

Grains	Total (th. Of. tons)	North West	Center	North East	South East	South Muntenia	Bucharest Ilfov	South West Oltenia	West
Wheat	8719,0	614.	387.9	618.3	1588.1	2618.2	83.9	1604.	1204.5
Barley	1706.0	73.4	67.2	73.8	530.	592.9	530.0	1235.7	121.7
Oats	171603	35.5	17.6	28.4	16.	25.7	0.321	31.3	16.4
Maize	8037.1	916.8	870.7	1436.4	1181.7	1964.2	37.9	1016.6	612.6

*Source Author, by using NIS (2023)*

Properly exploiting the 14.8 million hectares of farming land, of which over 9.3 million are arable, could provide food for over 80 million people. Unfortunately, 70 percent of all agricultural land is divided among small farmers, who practice subsistence farming, characterized by low productivity (Dima & Herlo, 2022). Agriculture, forestry, and fish farming contribute about 6% of Romania's Gross Domestic Product, whereas in the EU member states, it is around 1.7% (Association of Cross-Border Cooperation, 2021).

In an analysis of the evolution of the domestic agricultural sector concerning Galați County, was appreciated that no spectacular developments were highlighted after accession (Chiran et al., 2013). At the county level, as in most areas of Romania, the average crop productivity per hectare is quite low, there is a significant gap compared to the EU-developed countries, even if the production costs per hectare of the main agricultural products (including of origin animal) have increased a lot.

To bridge these gaps, in the period 2021- 2027 Romania will receive European funds of over 20 billion euros intended for agriculture and rural development, with the development, establishment, and modernization of agricultural units as the main action priorities; increasing the added value of agricultural and forestry products; renewal, development of villages, improvement of basic services for the economy and rural population and for capitalization of heritage (Smart et al. ABSC, 2023).

Romania could benefit from the favorable trends recorded in the global and European agri-food markets and its competitive advantages through active participation in the European agricultural market and third-world countries' markets. The national sector needs to better identify and effectively manage internal constraints and define the best ways to address external factors such as climate change. The Romanian agricultural sector must be guided by medium and long-term strategies and policies because there are numerous reform initiatives from the Romanian government and the EU (Radu, 2018).

An analysis of the quality of cereals harvested in Galați County subject to storage appreciated that the appropriate quality of cereal seeds used for sowing crops may have an important influence on preserving the quality of crops (Dumitriu et al., 2020). Low temperatures can be a storage alternative, and the costs of conditioning the specially designed space are amortized by reducing losses.

Optimizing the quality of cereal seeds intended for sowing land can also represent an important aspect of agricultural production in Romania and Galați County. Before sowing, a comparative study of cereal varieties, indigenous or imported, must be carried out, and their correlation with soil characteristics can lead to significant crop increases (Dumitriu et al., 2019).

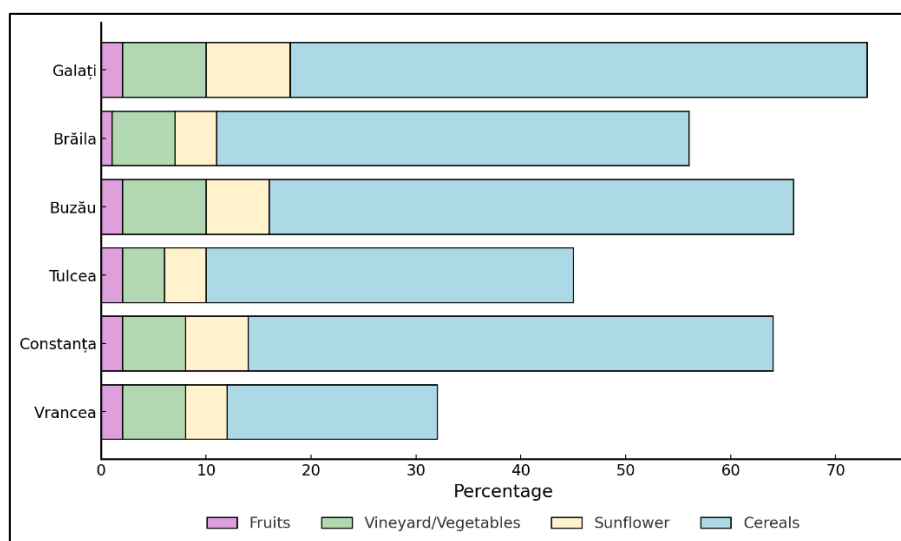
Government measures meant to encourage grain production in Romania also included the financing of storage spaces (silos, warehouses, depots), this stage being important in reducing losses of agricultural products. The study conducted by Stanciu (2017) highlighted the fact that these grants were popular among farmers, reducing food waste and especially the dependence on buyers, who in many cases bought the harvest directly from the field, due to the lack or insufficiency of storage spaces within farms. In our country, the commercial addition of grain go-betweens exceeds 100 euros/ton (by comparing the purchase prices at the farm gate and the delivery prices in the Constanța Harbour), while in Western Europe the differences are a maximum of 15-20 euros/ton.

The technological treatments applied to cereals during the agricultural production or storage/marketing stage must be correctly chosen, so that the maximum allowed limits, recommended by European norms/international standards, are not exceeded.

The study by Stanciu (2019) highlighted those Romanian cereals traded on the European market registered a significant increase in quality. The Rapid Alert System for Food Platform and Feed (RASFF) notifications regarding these aspects have become increasingly rare. Romanian farmers have recently begun to apply modern farming production systems, including monitoring methods based on the use of GPS systems or agricultural drones. The research performed by Fertu et al. in 2019 underlined the fact that monitoring the evolution of vegetable crops using drones can increase productivity, and applying pest treatments with this system is much more convenient than the conventional option.

### 3. Results

Along with Brăila, Buzău, Tulcea, Constanța, and Vrancea counties, Galați is part of the Southeast region of Romania, which has a total area of 35.762 km<sup>2</sup> (15% of the total national area) and is the second largest of the 8 regions. In the SE part of Romania, cereal and sunflower crops are the most common on agricultural farms, exceeding 80% of the arable agricultural surface in most counties (Figure 1). With 65% of the total area allocated to cereals, Galați occupies the second position, next to Brăila, being exceeded only by Buzău County (70%). The local geographical conditions favor the cultivation of vines or fruit trees, especially in the counties of Vrancea, Tulcea, and Galați.



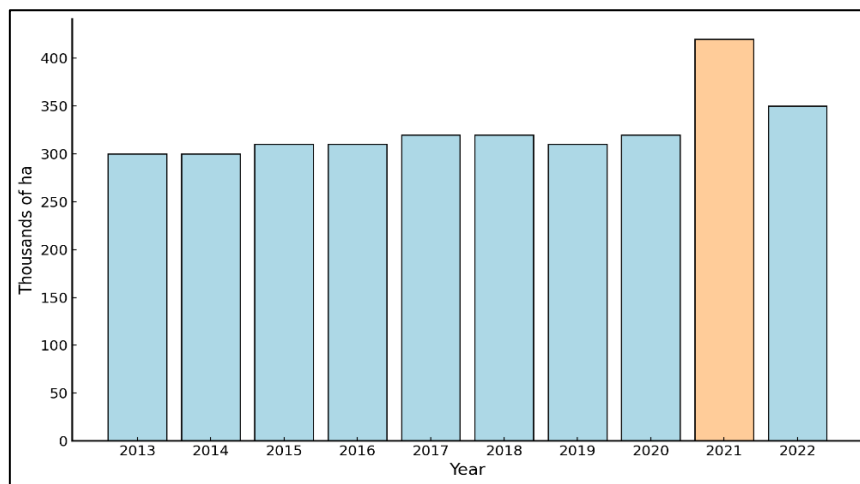
**Fig. 1. The main crops in the SE Region**

Source: Authors, by using Smart Business Services & Consulting ABSC

Agriculture plays an important role in Galați County in terms of the size of the rural population and the degree of employment. Approximately 45.7% of the county's population lives in the countryside, and 24.4% is involved in farming.

The agricultural sector in Galați County has a high share in the gross added value at the county level of approximately 9.2%, in 2016, compared to its share at the regional (7.9%) or national level (4.5%), but with a reduced overall labour productivity, estimated at 273.6 thousand lei/employed persons.

The wage earnings in the agricultural field in the farms in the county are close to the values of the minimum wage in the economy, an aspect that reduces its attractiveness to potential employees in this field. With an agricultural area of 358,311 ha, representing about 80.2% of the county's area, of which 292,926 ha are arable, 43,612 ha of pastures, 656 ha of hayfields, 19,397 ha of vineyards and wine nurseries and 1,720 ha of orchards and fruit nurseries, Galati County has contributed in 2018 with 17.7% to the value of the agricultural production of the South-East Region, decreasing compared to the contribution registered in 2008 (-18.9%), but increasing compared to 2012 (+15.2%).

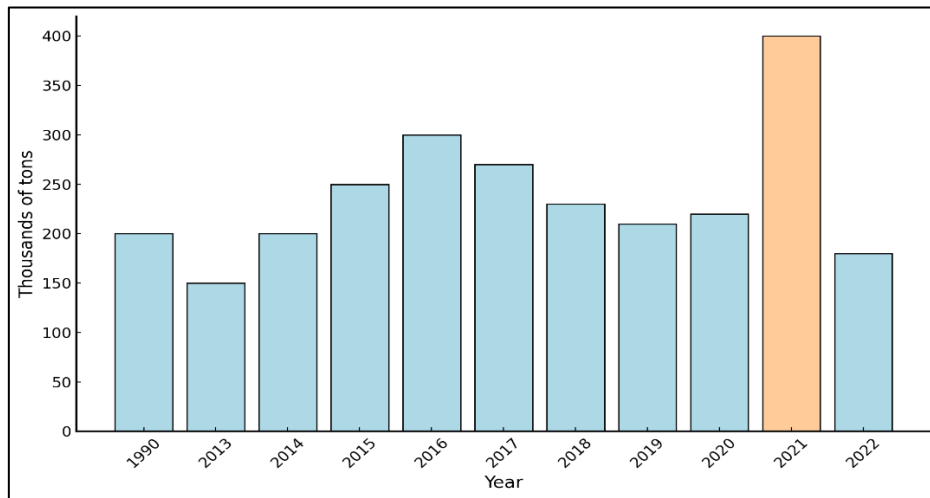


**Figure 2: The arable agricultural area of Galati County**

Source: Authors, by using NIS (2023)

The farming area of Galati County is focused on crops with high food and industrial importance, such as corn, wheat, sunflower, barley, legumes for grains, soy, etc. Important increases in areas of certain species and decreases in others were also recorded due to market mechanisms and measures meant to encourage farmers to cultivate certain species that are important for the national economy which tilted the trade balance to imports, such as sugar beet and flower- of the sun, at the expense of areas cultivated with cereals. While the cultivated agricultural area decreased by 1% in 2012 compared to 2008, from 258,250 ha to 256,685 ha, in 2018 compared to 2012 there was a 7.6% increase in the cultivated area, reaching 275,685 ha, with 17,435 ha more than in 2008. In 2021, a maximum of the arable surface was recorded, which reached the value of 419770 ha (figure 2). Over 60% of the cultivated farming area in the county was used for the cultivation of grains for grains (162,248 ha in 2012, with 8.6% less ha than in 2008, primarily for grain corn, 96,671 ha, with 5.7% less than in 2008. In 2022, grain production, in total plant crops obtained within the county, exceeded 65% of the total, followed by sunflower crops (20%)

The agricultural area cultivated with wheat decreased by 19%, from 59,195 ha in 2008 to 47,577 ha in 2018). However, there was a positive evolution of the harvested quantities, against the background of the increase in average productivity per ha (figure 3).

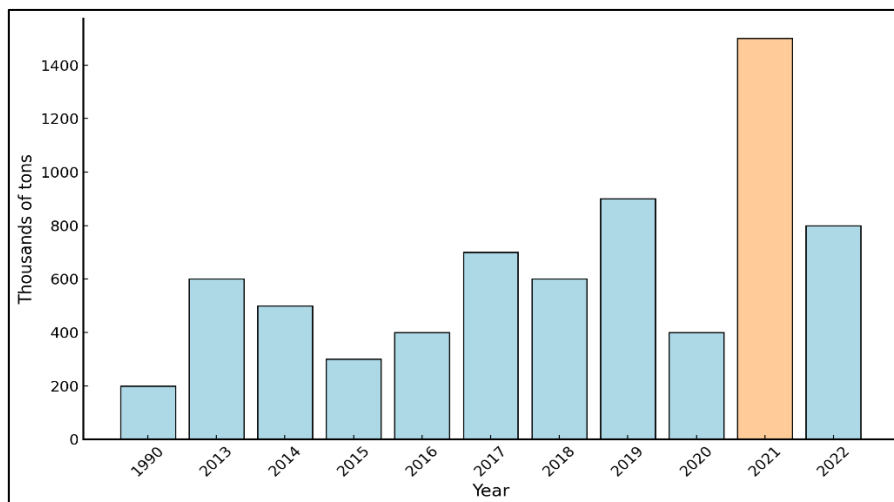


**Figure 3: Wheat production in Galati County (tons)**

Source: Authors, by using NIS (2023)

The minimum quantity was recorded in 2020 because of the calamity of crops due to the prolonged drought. From this point of view, the lack of an efficient irrigation system is one of the main problems of the county's agricultural sector.

Given that the territory of the county is crossed by three important sources of fresh water at the national level (the Danube, the Siret, and the Prut), the lack of irrigation can only be attributed to the carelessness of the authorities and the insufficiency of capital/investments in the local agricultural sector. Galați is one of the main producers of corn in the region, with a significant evolution of the harvested quantities in the period 1990-2022 (figure 4).



**Figure 4: Maize production in Galati County (Tons)**

Source: Authors, by using NIS (2023)

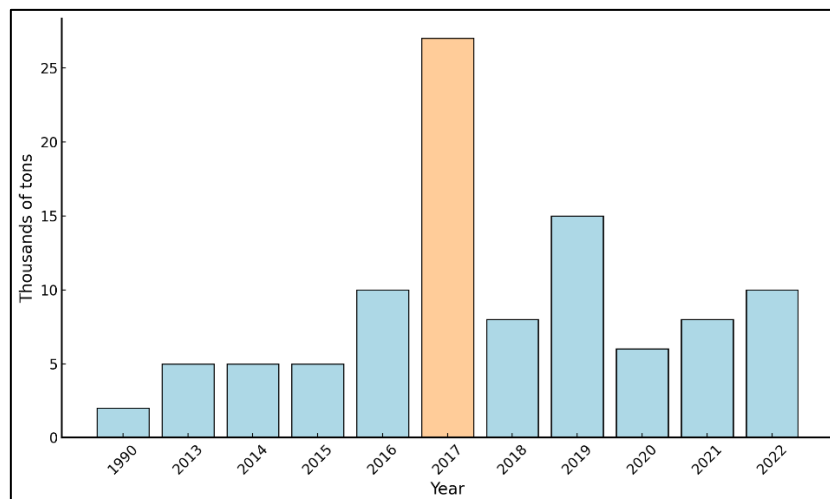
With over 1 million tons harvested, the year 2022 represented the peak of production in the analyzed period. As with other crops, the lack of an efficient irrigation system leads to important fluctuations in harvested quantities. in the conditions in which the agricultural areas allocated to these cereals have relatively constant values.

The increase in maize production is also due to the use of high-performance hybrids, which have brought increased production to farmers. Drought-adapted varieties with better resistance to pests and leading to higher production yields can be adapted to these regions and can bring added value to farmers. (Stoica et al., 2019).

The favorable weather conditions from the autumn of 2022 to the summer of 2023 create the conditions for record productions of wheat, corn, and other cereals if no extreme phenomena (hail, floods) are recorded, affecting the development, and harvesting of crops.

Recently, rye cultivation initiatives have been highlighted, against the background of increased demand from the bakery industry (in 2018, the areas allocated to these plants reached 357 ha. Oil plants also occupy an important area of the total cultivated area in the county. Whereas in 2012 compared to 2008 it decreased by 5%, in 2018 there was a 59.1% increase compared to 2012, thus reaching 82,437 ha. Of this area, 54,058 ha were cultivated with sunflowers in 2018, 45.4% more than in 2008.

The surface cultivated with rape decreased from 15,620 ha in 2008 to 1,108 ha in 2012 but has increased spectacularly in the last period, constantly exceeding 25,000 ha in recent years. This evolution can be justified by the demand registered in the market, an attractive price for capitalizing production, and the continuous need worldwide to identify and use new energy sources and alternatives to fossil fuels. Rapeseed is one of the vegetable agricultural species that can be used to obtain vegetable biofuels. In addition, the high prices recorded at the international level for these rapeseeds lead to important gains for farmers, which make these crops attractive and justify the increases in areas recorded in the last period at the national level (CJG, 2021). Interesting developments were also recorded in the production of leguminous beans (beans, peas, soybeans, lentils), with an optimum of the harvested quantities in 2017. In 2022, about 4500 thousand tons of beans were harvested (figure 5).



**Figure 5: Dried pulses in Galati County (tons)**

Source: Authors, by using NIS (2023)

The value of the agricultural production of Galati County exhibited a fluctuating evolution, following the trends recorded at the regional and national level in the period 2008-2018, with an increase of 35.2%, from 1,993.3 million lei to 2,695.4 million lei. The growth rate was higher than the growth rate recorded at the national level (28.9%) but lower than that recorded at the regional level (44.5%) (CJG, 2021). With

a fluctuating evolution of the county's contribution to the value of regional agricultural production by agricultural branches, in the period 2008-2018, there was a sharp decline in terms of agricultural services in Galati (-81.7%, from 77.5 million lei to 14.2 million lei), whose share in the region decreased from 28.3% in 2008 to 4.8% in 2018. Although the vegetable production in the county had a growth rate of 48.6% in 2018 compared to 2008, higher than the regional growth rate, the county's contribution in 2018 to the value of the region's vegetable production was 19.2%, slightly below the level of 2008 (19.9%).

The county's growth rate of animal production was 6.9%, below the evolution recorded at the regional level. The county's share of the region's animal production decreased in 2018 (13.1%), below the level of 2008 (15%) (CJG, 2021).

## 5. Conclusions

Galati County's agriculture has valuable natural resources, which, if properly used, could play an important part in the local economic and social development.

The farming sector is very important for the regional economy. About 40% of the workforce is engaged in this sector, and agricultural production contributes 16% to regional GDP. Cereal croplands have significant potential for future development. The sector requires substantial investments in mechanization, and developing a high-performance irrigation system is necessary to reduce dependence on meteorological conditions.

Higher education institutions, such as "Dunărea de Jos" University in Galati, with an agricultural faculty and numerous training programs for agricultural sector personnel, could be an important factor in developing the county and regional agricultural sector.

Through appropriate involvement in modernizing equipment and infrastructure, in collaboration with synergies among higher education institutions, local authorities, and the agricultural community, the county has the potential to achieve new levels of performance in agricultural production. Strengthening innovation capacity, optimizing agricultural practices, and promoting sustainability could transform agriculture in Galați into an engine of economic growth and social progress, bringing lasting benefits both locally and regionally.

The study can be employed by decision-makers at the local and regional levels to inform and guide agricultural policies. Furthermore, the research and conclusions of this study could serve as a foundation for developing sustainable development strategies in the agricultural sector, attracting investments in the modernization of infrastructure and agricultural practices. These findings can also be leveraged by higher education institutions to adapt and enhance training programs for professionals in the agricultural field, addressing the specific needs of the county and region.

## References

1. Consiliul Județean Galați, (2021), Strategia de Dezvoltare a Județului Galați 2021-2028, online, available at: <https://www.cjgalati.ro/images/stories/Comunicate21/03-strategia.pdf>, accesed 01.06.2023
2. Profit.ro, (2023), .Analiză: România are 6-a cea mai mare suprafață agricolă utilizată dintre țările UE, dar o producție slabă din lipsă de bani, instalații și fermieri pregătiți, online, available at



- <https://www.profit.ro/stiri/social/analiza-romania-are-6-a-cea-mai-mare-suprafata-agricola-utilizata-dintre-tarile-ue-dar-o-productie-slaba-din-lipsa-de-bani-instalatii-si-fermieri-pregatiti-16828061>, accessed 02.06.2023.
3. Dima, A., Herlo, P., (2022), Deși România ar putea hrăni 80 de mil. de oameni, agricultura rămâne un domeniu înapoiat, la mila cerului, online, available at <https://stirileprotv.ro/romania-te-iubesc/zagricultura-pe-aratura-agricultura-din-romania-ramane-inca-un-domeniu-inapoiat-la-mila-cerului.html>, accessed 02.06.2023.
  4. Association of Cross-Border Cooperation” Lower Danube Euroregion, (2021), Agriculture in Romania, online, available at [https://blacksea-cbc.net/wp-content/uploads/2022/01/BSB861\\_BRIDGES\\_-\\_Study-of-international-trade-of-agricultural-and-connected-products-in-the-Romania\\_EN.pdf](https://blacksea-cbc.net/wp-content/uploads/2022/01/BSB861_BRIDGES_-_Study-of-international-trade-of-agricultural-and-connected-products-in-the-Romania_EN.pdf), accessed 02.06.2023.
  5. Chiran, A., Dima, Fl-M., Gîndu, E., Jităreanu, A.F., Ungureanu, G., (2013), Evolution of the Agricultural Production in Galați County after Romania’s Accession to the European Union, Analele Universității din Oradea, Fascicula: Ecotoxicologie, Zootehnie și Tehnologii de Industrie Alimentară Vol. XII/B, 2013, pp. 31-38, online, available at [https://protmed.uoradea.ro/facultate/anale/ecotox\\_zooteh\\_ind\\_alim/2013B/imapa/5.Chiran%20A.pdf](https://protmed.uoradea.ro/facultate/anale/ecotox_zooteh_ind_alim/2013B/imapa/5.Chiran%20A.pdf), accessed 02.06.2023.
  6. Smart Business Services & Consulting ABSC, (2023), Agriculture and Rural Development. Present and Prospects in Romania, Agriculture & European Structural Funds, online, available at <https://www.smart-bsc.ro/en/agriculture-rural-development.html>, accessed 12.06.2023.
  7. Radu, L., (2018), The Agricultural Crops Production of Romania, “Ovidius” University Annals, Economic Sciences Series, Vol. XVIII (2 /2018), 177-181., online, available at <https://stec.univ-ovidius.ro/html/anale/RO/wp-content/uploads/2019/02/17.pdf>, accessed 14.06.2023.
  8. Dumitriu (Ion), I.M., Stoica, C., Munteanu, (Pila), M., Florea, A.M., Stanciu, S., (2020), Management and Quality Control of Grain Seed. Research on The Influence of Storage Conditions, Proceedings of 35th International-Business-Information-Management-Association Conference (IBIMA): Education Excellence and Innovation Management: A 2025 Vision to Sustain Economic Development During Global Challenges, (Seville, Spain, April 01-02, 2020), pp. 8336-8344, Ed. Soliman, K.S., ISBN: 978-0-9998551-4-0.
  9. Dumitriu, (Ion) I.M., Stoica (Dinca), C., Băcanu (Serban), M. C., Nicula, M., Stanciu, S., (2019), Research on Optimizing the Quality of the Lots of Grain Cereals Seeds for Sowing, Proceedings of the 33rd International Business Information Management Association Conference: Education Excellence and Innovation Management through Vision 2020 (Granada, Spain, April 10-11, 2019), Vol. I-X, pp. 3732-3739, Ed. Soliman, K.S., ISBN: 978-0-9998551-2-6.
  10. Stanciu, S., (2017), An Analysis of the Romanian Storage Capacity for Seed Production, Proceedings of the 29th IBIMA Conference: Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, (Vienna, Austria, May 3-4, 2017), Ed. K.S. Soliman, ISBN 978-0-9860419-7-6, Vols. I-IX, pp.1200-1207.
  11. Stanciu, S., (2019), Quality of Romanian Food Products in Rapid Alert System for Food and Feed Notifications, World Academy of Science, Engineering and Technology International Journal of Nutrition and Food Engineering, 13(2), pp. 34-37.
  12. Fertu, C., Balasan, L.D., Zanet, V., Stanciu, S., (2022), The future of agriculture drone technology. Trends and prospects, Proceedings of 79th International Scientific Conference on Economic and

- 
- Social Development (Rabat, Maroc, March 25-26, 2022), ISSN 1849-7535, Ed. Machrafi, M., Uckar, D., Susak., T., pp. 68-76, <http://hdl.handle.net/11159/7649>.
13. National Institute of Statistics NIS, (2023), Tempo online. Agriculture. online, available at <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>, accessed 19.06.2023.
14. Stoica (Dinca), C., Băcanu (Serban), M. C., Ion (Dumitriu,) I.M., Nicula, M., Stanciu, S., (2019), Aspects Regarding the Selection of Maize Hybrids on Agricultural Farms in North Baragan Plain, Romania, Proceedings of the 33rd International Business Information Management Association Conference: Education Excellence and Innovation Management through Vision 2020 (Granada, Spain, April 10-11, 2019), Vol. I-X, pp. 2341-2348, Ed. Soliman, K.S., ISBN: 978-0-9998551-2-6.