

ECONOMIC AND TECHNOLOGICAL ANALYSIS OF WHEAT PRODUCTION IN ROMANIA: TRENDS, PRODUCTIVITY AND MARKET DYNAMICS (2019–2023)

Iasmina BOGDAN¹, Samira FACA¹, Darius Paul BERCE², Mirela CASĂU¹

¹ University of Oradea, Faculty of Environmental Protection, Gen. Magheru street, no. 26, Oradea, Romania

² University of Oradea, Faculty of Economic Sciences

REVIEW, RESEARCH ARTICLE –

Abstract

Wheat production represents a fundamental component of the agricultural sector in Romania, playing a crucial role in ensuring food security, supporting rural economies, and contributing to international trade. This study aims to analyze the evolution, economic performance, and technological aspects of wheat production in Romania over the period 2019–2023.

The research is based on statistical analysis of key indicators, including cultivated area, average yield, total production, and farm-gate prices, using data from national and European sources. The results reveal that the cultivated area remained relatively stable, exceeding 2 million hectares annually, while production levels and yields fluctuated significantly due to climatic variability and input cost dynamics.

The year 2020 was identified as a critical agricultural year, characterized by severe production decline, whereas 2019 and 2021 were peak years with high productivity and output levels. The period 2022–2023 reflects a recovery and stabilization trend, although still influenced by environmental and economic constraints.

The study also highlights structural characteristics of the sector, including Romania's role as a major exporter of raw wheat and importer of processed wheat-based products, indicating an underdeveloped value-added processing chain. Technological factors such as seed quality, fertilization, crop protection, and mechanization were identified as essential determinants of productivity and economic performance.

In conclusion, improving wheat production in Romania requires the integration of advanced agricultural technologies, investment in processing infrastructure, and better market organization, contributing to the sustainable development of the rural economy.

Keywords: (max. 5) wheat production; rural economy; agricultural productivity; yield variability; economic performance; crop technology; market dynamics;

#Corresponding author: mirelamitulescu@yahoo.com

Introduction

Wheat production represents one of the most important components of the agricultural sector in Romania, playing a key role in ensuring food security, supporting rural economies, and contributing to international trade. As a staple crop widely cultivated across diverse agro-climatic regions, wheat is essential not only for domestic consumption but also for export markets, positioning Romania among the significant producers within the European Union.

Over the past decades, the wheat sector has undergone considerable transformations, influenced by technological progress, market liberalization, and changing climatic conditions. The adoption of modern agricultural practices, including improved seed varieties, fertilization strategies, and mechanization, has contributed to increased productivity. However, despite these advancements, wheat production in Romania remains highly dependent on climatic variability, particularly drought and extreme weather events, which significantly affect yield stability and overall output.

During the period 2019–2023, the Romanian wheat sector experienced notable fluctuations in production and productivity, despite a relatively stable cultivated area exceeding 2 million hectares. These variations reflect the combined influence of environmental factors, input costs, and technological differences across farms. The year 2020 stands out as a critical agricultural year due to severe drought conditions, while 2019 and 2021 were characterized by high productivity and favorable climatic conditions.

From an economic perspective, wheat production contributes significantly to farm incomes and the national agri-food balance. However, the sector is characterized by structural imbalances, particularly Romania's role as a major exporter of raw wheat and importer of processed wheat-based products. This situation highlights the limited development of the processing industry and the need to increase value-added production within the country.

In addition, the competitiveness of wheat production is influenced by several factors,

including farm size, access to technology, input costs, and integration into supply chains. Small and medium-sized farms often face difficulties in adopting advanced technologies, which affects their productivity and economic performance. At the same time, global market dynamics, price volatility, and policy frameworks at the European level further shape the development of the sector.

In this context, the objective of the present study is to analyze the evolution, economic performance, and technological characteristics of wheat production in Romania over the period 2019–2023. The study focuses on key indicators such as cultivated area, yield, total production, and price dynamics, aiming to identify the main trends, constraints, and development opportunities within the rural economy.

Materials and Methods

The present study is based on the statistical analysis method, applied to evaluate the evolution of wheat production in Romania during the period 2019–2023.

The analysis uses secondary data collected from official statistical sources such as

Eurostat and Institutul Național de Statistică, including key indicators such as cultivated area, average yield, total production, and farm-gate prices.

The statistical approach involves descriptive and dynamic analysis, allowing the identification of trends, fluctuations, and patterns in wheat production. Comparative analysis between years was also conducted to classify agricultural years into peak, average, and critical categories, based on production performance.

This methodological framework enables a comprehensive understanding of the relationship between climatic conditions, technological practices, and economic outcomes in the wheat sector.

Results and Discussion

The analysis of wheat production in Romania for the period 2019–2023 highlights a relatively stable cultivated area, fluctuating slightly around 2.1–2.3 million hectares. This stability indicates the strategic importance of wheat within Romanian agriculture and its role in ensuring food security.

Tabel 1.

Evolution of cultivated area of wheat in Romania (2019–2023)

Year	Area (mil. ha)	Yield (t/ha)	Production (mil. tons)	Price (lei/kg)
2019	2.168	4.749	10.297	0.77
2020	2.155	2.966	6.392	0.87
2021	2.175	4.797	10.434	1.10
2022	2.168	4.004	8.684	0.86
2023	2.318	4.364	9.624	1.10

Source: own processing based on Institutul Național de Statistică and Eurostat data

However, significant variations are observed in productivity and total production. The year 2020 recorded the lowest yield (approximately 2.96 t/ha) and total production (around 6.39 million tons), being classified as a critical agricultural year due to unfavorable climatic conditions, particularly drought.

In contrast, 2019 and 2021 were peak years, with yields exceeding 4.7 t/ha and production levels surpassing 10 million tons. These results reflect favorable climatic conditions and effective application of agricultural technologies.

The years 2022 and 2023 represent a recovery phase, with moderate yields (around 4.0–4.36 t/ha) and production levels between 8.6 and 9.6 million tons. This indicates a gradual stabilization of the sector, although still influenced by environmental and economic constraints.

From an economic perspective, wheat prices showed variability, influenced by global market conditions, production levels, and input costs. The relatively higher prices in 2021 and 2023 suggest a correlation between reduced supply and increased market value.

Figure 2.

Evolution of average wheat yield in Romania (2019–2023)

Year	Production level	Interpretation
2019	High	Favorable climatic conditions
2020	Very low	Severe drought year
2021	Very high	Optimal conditions

2022	Medium	Partial recovery
2023	Medium-high	Stabilization trend

Source: own processing based on Institutul Național de Statistică and Eurostat data

A key structural issue identified is Romania’s dual role as a major exporter of raw wheat and an importer of processed wheat products. This reflects a weakly developed processing sector and highlights the need for increased value-added production within the country.

Overall, the results demonstrate that wheat production in Romania is highly sensitive to climatic conditions and depends significantly on technological inputs and farm management practices.

Conclusions

The analysis of wheat production in Romania over the period 2019–2023 highlights the strategic importance of this crop within the national agricultural sector and its significant contribution to food security and rural economic development. The results demonstrate that, although the cultivated area remained relatively stable at over 2 million hectares annually, production and yield exhibited considerable fluctuations due to climatic variability and technological factors.

The study identified distinct agricultural patterns across the analyzed period. The years 2019 and 2021 were characterized as peak production years, with high yields and total output exceeding 10 million tons, reflecting favorable climatic conditions and effective farm management practices. In contrast, 2020 was a critical year, marked by severe drought and a significant decline in productivity and production. The subsequent years, 2022 and 2023, indicate a gradual recovery and

stabilization of the sector, although production levels remain sensitive to environmental and economic constraints.

From an economic perspective, the variability of farm-gate prices reflects the influence of both domestic production levels and global market conditions. The increase in prices observed in certain years suggests a response to reduced supply and rising production costs, but also highlights structural inefficiencies within the agricultural value chain.

A key finding of the study is the structural imbalance of the sector, where Romania acts predominantly as an exporter of raw wheat while importing processed wheat-based products. This situation reveals the underdevelopment of the processing industry and the limited capacity to generate added value within the country.

Overall, the results emphasize that wheat production in Romania is strongly influenced by climatic conditions, technological practices, and market dynamics. Improving the sector’s economic performance requires a comprehensive approach that integrates technological modernization, improved farm management, and stronger market organization. Enhancing wheat production in Romania requires the transition from a raw material-based agricultural model to a value-added and technology-driven system, capable of ensuring long-term sustainability and competitiveness within the European agricultural market.

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