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REGIONAL DISPARITIES, PRODUCTION STRUCTURE, AND PRODUCTIVITY OF CEREALS GRASSES IN ROMANIA – A COMPARATIVE ANALYSIS FOR 2025

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Abstract: The study conducted a comparative assessment of the production of wheat, rye, barley (including two-row barley), oats, and triticale across Romania's eight development regions, using statistical data for 2025 provided by the National Institute of Statistics. In the analyzed dataset, wheat accounted for the largest share (69.83% of the combined production of the five crops), followed by barley (22.13%), triticale (4.05%), oats (3.41%), and rye (0.58%). Regarding geographical distribution, the North-East region accounts for the largest portion of the analyzed combined production (25.49%), followed by the North-West region (17.53%). The analysis provides a concise overview of the specialization and relative competitiveness of the regions in small-grain cereal production and can serve as a basis for decisions regarding the development and efficiency improvement of the cereal sector.

• Introduction

Agriculture continues to play an important role in Romania's economy, both through its contribution to agri-food production and land resource utilization, and through the economic and social functions it fulfills in rural areas [8]. At the same time, Romanian agriculture exhibits a highly polarized structure [3]. Spatiotemporal analyses conducted for Romania's main agricultural crops have highlighted the existence of areas with a pronounced specialization in cereal production, as well as significant variations between counties and regions regarding cultivated area and production levels [2]. Territorial disparities are also relevant in the case of crop production. Popescu et al. (2025) [13] showed that significant differences persist among Romania's eight development regions regarding a range of agricultural and economic indicators. In this context, the aim of the study was to conduct a comparative analysis of the production and productivity of the main small-grain cereals across Romania's eight development regions, based on statistical data for the year 2025.

• Material and method

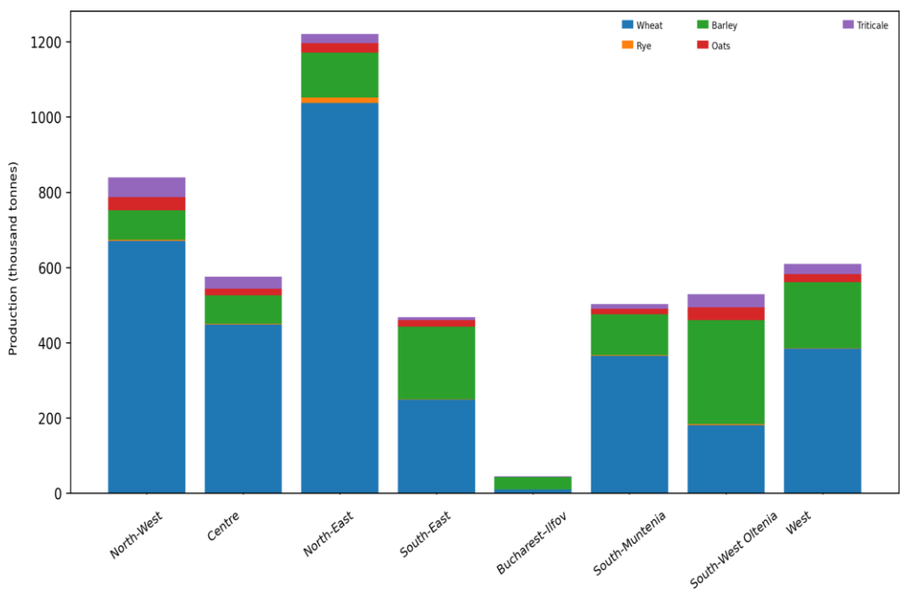
The study was conducted based on official statistical data provided by the National Institute of Statistics [9] for wheat, rye, barley (including spring barley), oats, and triticale crops. The analysis covered Romania's eight development regions: North-West, Center, North-East, South-East, Bucharest-Ilfov, South-Muntenia, South-West Oltenia, and West. The database structure enabled comparisons both between regions for the same crop and between crops within the same region.

• Results and discussions

The combined production of the five crops included in the analyzed dataset was 4,789,002 tonnes. Its composition is heavily dominated by wheat, which totaled 3,344,158 tonnes, representing 69.83% of the analyzed total. Barley ranked second, with 1,059,721 tonnes, accounting for 22.13%. The other three crops represented considerably smaller shares: triticale accounted for 4.05%, oats for 3.41%, and rye for only 0.58% of the combined production. Thus, wheat, together with barley, accounted for 91.96% of the total production of the five crops analyzed.

A significant finding was the difference between the ranking based on production volume and that based on estimated aggregate productivity. The breakdown of production by crop and region is illustrated in Figure 1. The Location Quotient (LQ) analysis enabled the identification of the regions' relative specializations. The highest value in the entire dataset was calculated for barley in the Bucharest-Ilfov region (LQ = 3.29). The complete distribution of specialization coefficients is presented in Figure 3.

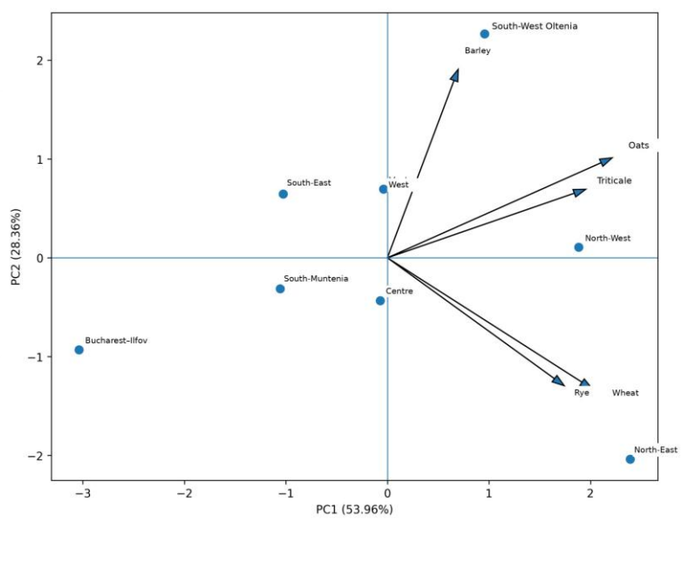
Multivariate analysis (PCA) revealed a clear multivariate structure of regional production. The first principal component (PC1) explained 53.96% of the total variance, while the second component (PC2) explained 28.36%. Together, the two components account for 82.33% of the total information, a sufficiently high percentage for a synthetic representation of the relationships between regions and crops in a two-dimensional plane. The positions of the regions and the crop vectors in the space defined by the two principal components are shown in Figure 4.



Regional structure of production for the five analyzed crops, Romania, 2025



Regional specialization of small-grain cereal production based on the Location Quotient (LQ)



PCA biplot of development regions based on cereal production

• Conclusions

An analysis of small-grain cereal production across Romania's eight development regions for 2025 revealed significant territorial disparities regarding production volume, productivity, and crop structure. Wheat made the largest contribution (69.83% of the combined output), followed by barley (including two-row barley) at 22.13%; together, these accounted for nearly 92% of the total production within the analyzed dataset. Regional differences were also highlighted by the coefficient of variation; wheat exhibited the lowest productivity variability across regions (CV = 7.33%). Based on the HHI, rye showed the highest regional concentration(HHI = 0.323), primarily due to the significant share of the North-East region.

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