

Exploring Global Agriculture

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Abstract

Agriculture plays a central role in the development and prosperity of human society. It is essential nowadays, as a result of supporting the global economy, but also by ensuring food security. Although agriculture contributes modestly to the world's Gross Domestic Product (GDP), it nevertheless represents an essential pillar of many national economies, especially in developing countries. Global agriculture is being significantly affected by climate change, and the Covid-19 pandemic has created additional financial problems for farmers. To cope with this climate change and combat its effects, it is necessary to increase productivity in agriculture and promote jobs in this sector. The paper analyses the structure of the total area, by use, the production of the main agricultural products and the number of animals in the period 2013-2022. By capitalizing on its natural advantages and agricultural tradition, Romania can contribute to strengthening food security at the regional and European levels and can have a prominent role in the global economy.

Keywords: agricultural area, animal husbandry, economic development, food security, plant cultivation, total production.

1.Introduction

The need for agricultural development stems from its primary role in meeting the food needs of the populations of all countries in the world. Agriculture also contributes to human well-being, primarily by providing the necessary food [1,2,3]. The story of agriculture is indisputably linked to the history of mankind and has evolved together. The study of agriculture involves continuous research, innovation and adaptation to ecological and economic changes.

Also having a role as a fundamental pillar of human civilization, it is subject to unprecedented challenges. Agriculture is important both for meeting human needs by providing food but also through a wide range of biomedical and industrial products. Even though in reality we are witnessing

the annual increase in agricultural production, approximately one in 10 people globally is affected by hunger, does not have enough food and suffers from micronutrient deficiencies and diseases caused by them. [4,5,6]

The world population is expected to grow from nearly 7 billion today to 8 billion by 2030 and to around 10 billion by 2050. [7]

This growth will require additional resources to increase agricultural production and will also put increased pressure on the food system. [8]

The global agricultural landscape is facing the increasing impact of climate change. [9,10]

James Maxwell, believes that "without agriculture, many economies would stagnate and social progress would be seriously affected."

Following multidisciplinary and interdisciplinary research, a call for "100 Essential Questions for the Future of Agriculture" was launched, sent to communities around the world (scientists, engineers, farmers, entrepreneurs, policymakers and the general public) with interests in the future

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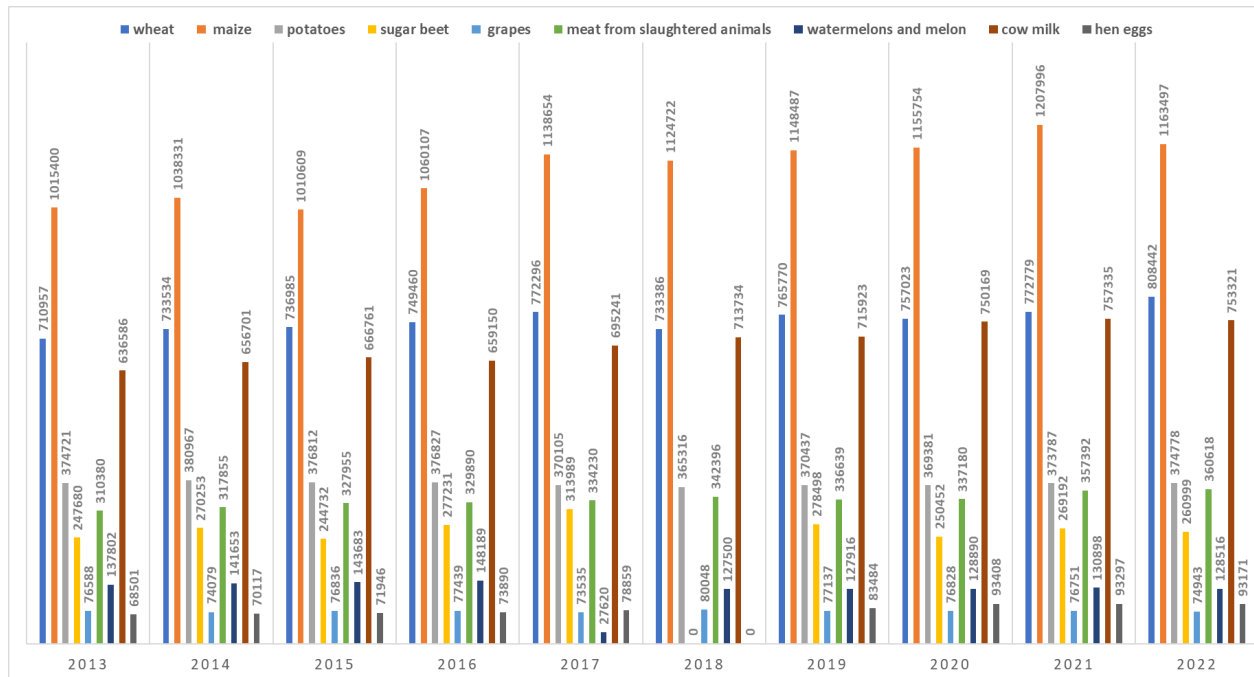


Figure 2. Total world production of major agricultural products, 2013-2022 (thousand tons)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024 [15]

One of the many problems facing the planet, as highlighted during the International Conferences in Rio, New York and Johannesburg, is the provision of food for the world's population, both now and in the future.

From the statistical data provided by the countries of the world and processed by the F. A. O., it is evident that quantitatively and on average, the productions that are obtained, along with the existing stocks of agricultural products, can satisfy the global need for agri-food products, taking into account the consumption norms, expressed in calories/person/day [16].

The corn crop, along with wheat, occupies a top position in the lists of the most widespread agricultural crops.

The analysis of the average world production per hectare of wheat crop highlights the fact that it has increased in the ten years analysed from 3268 kg/ha in 2013 to 3689 kg/ha in 2022 (Figure 3).

For corn, the average world production per hectare also followed an upward trend according to Figure 4.

The average world production per hectare for potatoes, as shown in Figure 5, recorded the highest value in 2019, at 21,362 kg/ha.

The average world production per hectare for grapes increased from 10,787 kg/ha to 11,135

kg/ha during 2013-2022, with a minimum of the period in 2014 of 10,457 kg/ha due to the decrease in yield per hectare.

Even though the costs of sugar beet cultivation are high compared to other crops, it is a crop where the average world production per hectare of sugar beet recorded its maximum in 2017, namely 61,507 kg/ha (Figure 7). In 2022, the average world production was 60,766 kg/ha.

According to Figure 8, the world cattle population increased from 1,627,471 thousand heads in 2013 to 1,756,657 thousand heads in 2022.

For pig populations, the situation is similar to the case of cattle. Here too, there is an increase from 976,341 thousand heads in 2013 to 978,972 thousand heads in 2022 and a reduction to 850,320 thousand heads in 2019 due to the disaster caused by African swine fever.

Sheep and goat populations increased by approximately 400,000 thousand heads from 2,087,439 thousand heads to 2,466,921 thousand heads during the period studied.

And the number of poultry increased worldwide from 22,898,437 thousand heads to 28,310,155 thousand heads, respectively by 19.11% during the period 2013-2022.

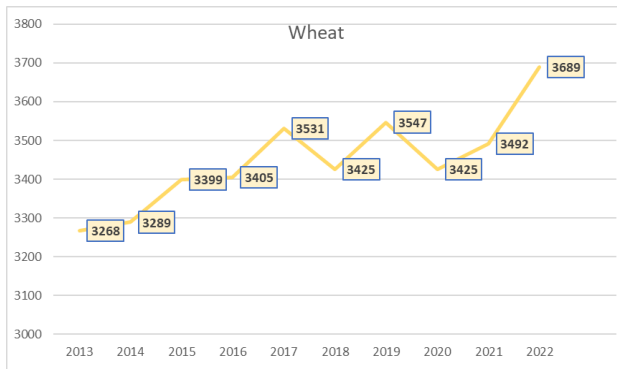


Figure 3. Average world production per hectare of wheat (kg/hectare)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

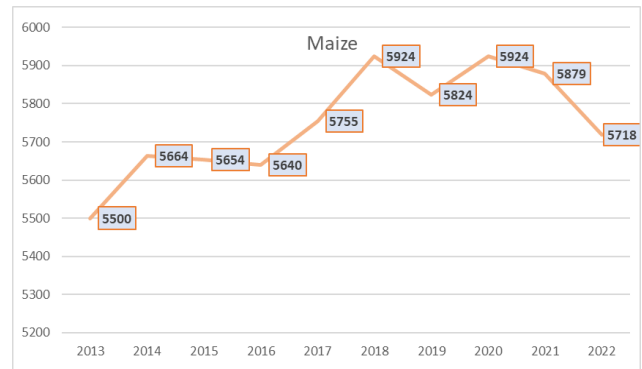


Figure 4. Average world production per hectare of maize (kg/hectare)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

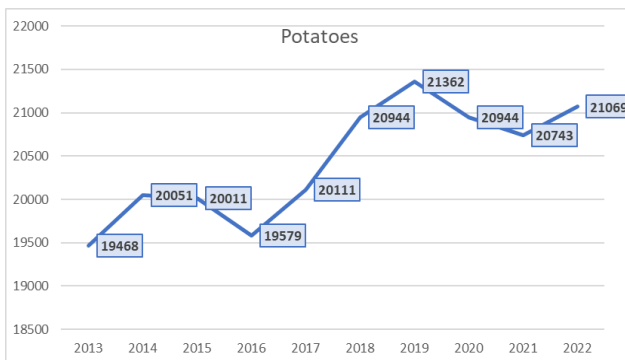


Figure 5. Average world production per hectare of potatoes (kg/hectare)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

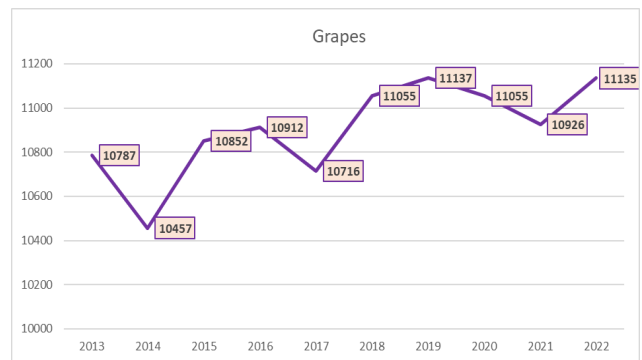


Figure 6. Average world production per hectare of grapes (kg/hectare)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2014-2024[15]

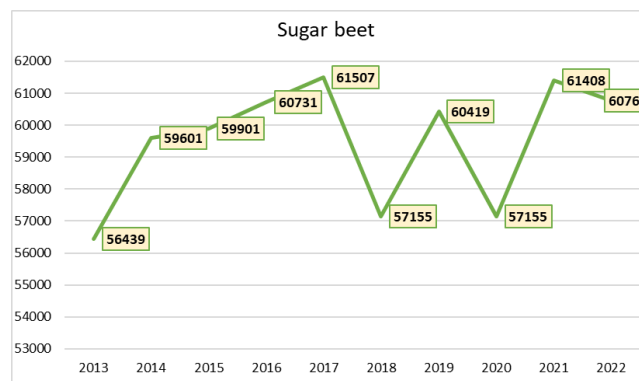


Figure 7. Average world production per hectare of sugar beet (kg/hectare)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

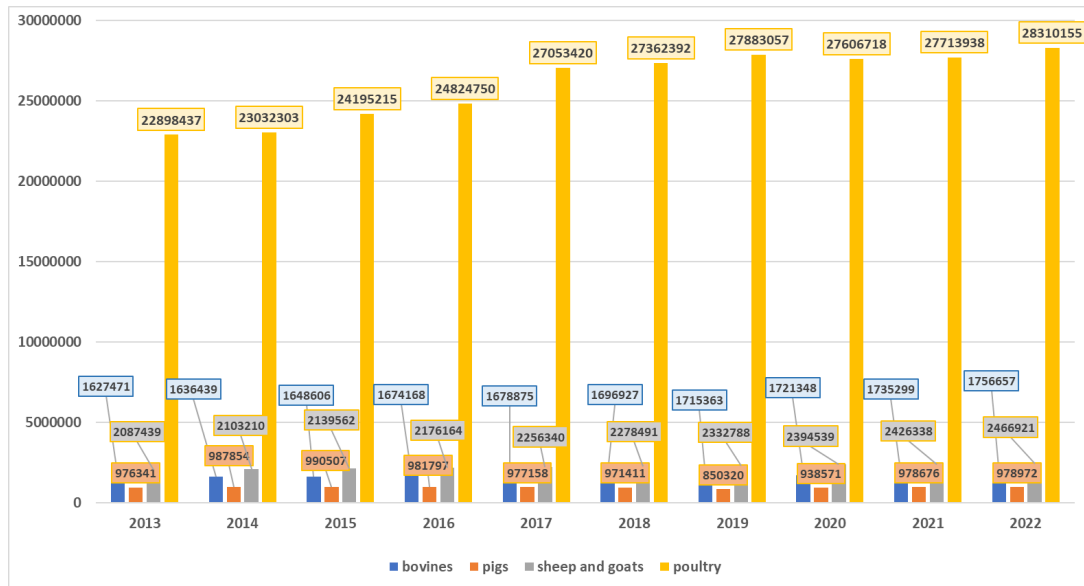


Figure 8. Evolution of the number of animals worldwide (thousands of heads)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

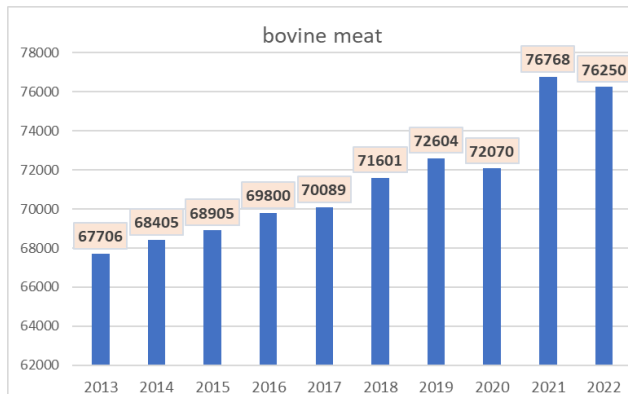


Figure 9. Total world production of bovine meat (thousands of carcass tons)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

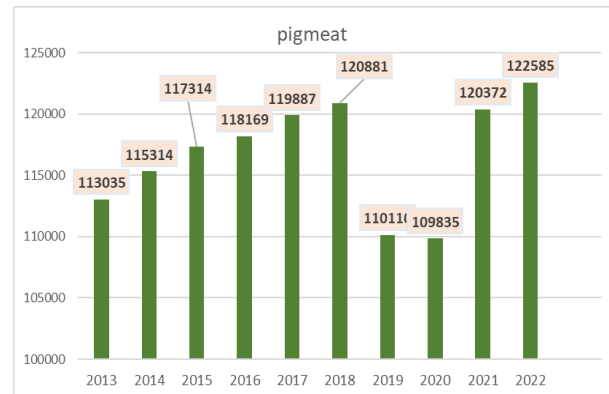


Figure 10. Total world production of pig meat (thousands of tons of carcasses)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

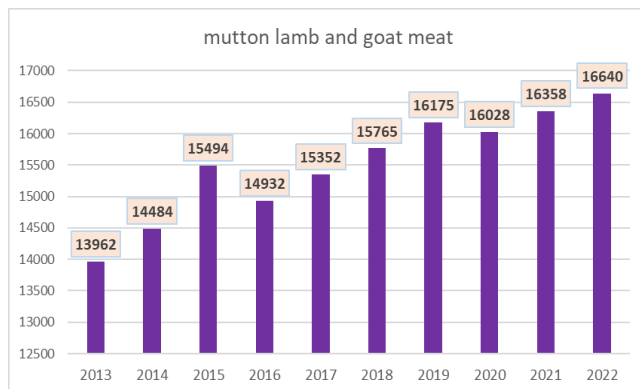


Figure 11. Total world production of mutton lamb and goat meat (thousands of tons of carcasses)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

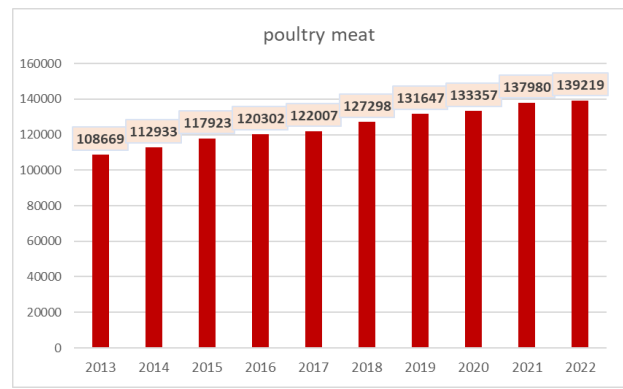


Figure 12. Total world production of poultry meat (thousands of tons of carcasses)

Sources: National Institute of Statistics (INS), Statistical Yearbook of Romania, 2015-2024[15]

Regarding the total world meat production, it increased in the period under study, in 2022, being 360,618 thousand tons.

The analysis of the total world meat production by animal category shows that the trend is increasing as we will present below.

The total world beef production (Figure 9) had an advance of 8,544 thousand tons of carcass in the analysed period (from 67,706 thousand tons of carcass in 2013 to 76,250 thousand tons of carcass in 2022).

In the total world pork production, the years 2019 and 2020 were marked by a decrease of approximately 12,600 thousand tons of carcass, compared to 2022 (122,585 thousand tons of carcass).

The total world production of goat and sheep meat was notable for its year-on-year growth, reaching a maximum in 2022 of 16,640 thousand tons of carcass, as shown in Figure 11.

The total world production of chicken meat also followed the upward trend by 21.94%, from 108,669 thousand tons of carcass in 2013 to 139,219 thousand tons of carcass in 2022.

According to an analysis published by RaboResearch, the global poultry industry is forecast to grow by 2.5%-3% in 2025, on the back of accessibility and sustainability, but there are also challenges caused by avian influenza and geopolitics [18].

World meat production is estimated to continue to grow, but slightly slower than in recent years. Compared to the average of 2018-2020, meat production will advance by 13% by 2030, according to the EuroMeatNews.com platform [18].

The overall increase will be due to poultry meat production, which will increase by 17% by 2030, as it benefits from favourable reports on meat-food prices and the short production cycle that also allows for rapid genetic improvement [19].

4. Conclusions

We can appreciate that the evolution of agriculture is intertwined with the history of humanity and that it evolves concurrently. By studying the complexity of food production, we discover the diversity of agricultural systems and their implications, which have a crucial role in shaping a sustainable future. The study of world agriculture highlighted an increase in the dynamics of total world production of the main agricultural products during the period 2013-2022.

The most widespread agricultural crops worldwide are corn, along with wheat. The average world production per hectare of the two crops has recorded an upward trend.

The world livestock population has also increased. Regarding the total world production of meat, the developments here have also been upward, and the trend will continue, but slightly slower than in recent years.

The development of agriculture on a global scale contributes to ensuring national independence and food security. The lagging behind of developing countries has influenced the economic gaps between rich and poor countries. A revived agriculture in countries with food deficits will ensure social stability and material well-being of the population.

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