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**THE INTERNATIONAL COMPETITIVENESS OF UKRAINE'S
AGRICULTURE: WARTIME CHALLENGES AND STRATEGIC
RESPONSES**

**МІЖНАРОДНА КОНКУРЕНТОСПРОМОЖНІСТЬ СІЛЬСЬКОГО
ГОСПОДАРСТВА УКРАЇНИ: ВИКЛИКИ ВОЄННОГО ЧАСУ ТА
СТРАТЕГІЧНІ РІШЕННЯ**

Summary. *Introduction. The Ukrainian agricultural sector is one of the basic components of the national economy, but the war has radically changed its position in the world markets. Analysis of wartime challenges and development of proposals for a strategy to restore the competitiveness of the industry in the international arena is a key issue that requires a thorough approach to solving.*

Purpose. The purpose of the study is to develop the theoretical and methodological foundations and practical recommendations for ensuring the international competitiveness of the agricultural sector of Ukraine in the context of war.

Materials and methods. The study was conducted on the basis of a critical analysis of theoretical approaches to determining the essence of international competitiveness. To identify the dynamics of the development of the Ukrainian agricultural sector, economic and statistical methods of processing data from the State Statistics Service of Ukraine were used. A detailed analysis of data from the Food and Agriculture Organization of the United Nations, the State Employment Service of Ukraine and the State Statistics Service of Ukraine, as well as scientific and analytical works of domestic and foreign experts allowed us to determine the main competitive positions and threats to the development of the Ukrainian agricultural sector. Scenario modeling methods were used to build three possible scenarios for the development of the agricultural sector of Ukraine. Based on the systems approach, recommendations were proposed to ensure the international competitiveness of this sector of the economy.

Results. The study proved that the agricultural sector of Ukraine is a strategically important component of the national economy and has significant potential for further development with the implementation of effective public and private initiatives. After the outbreak of the war, the state of agricultural development has undergone significant changes, but its share in GDP remains stable. It was determined that the main crops in the production and export of

Ukraine are wheat, corn and sunflower. Currently, Ukraine remains one of the leading suppliers of these crops on the world market, although export routes and logistics have been significantly affected by the war. The analysis of the dynamics of exports showed an increase in the dependence of the domestic agricultural sector on international markets. The change in the main importers of Ukrainian products is due to both economic factors and geopolitical changes.

The constructed scenarios for the development of the industry determine the prospects for the resumption of production and export of agricultural products under the optimistic, pessimistic and restrained (realistic) options. A realistic scenario, the most likely according to expert estimates, assumes a gradual recovery, but requires active government support measures.

The study systematizes the main challenges facing the agricultural sector, namely: disruptions in logistics, increased production costs, changes in the land fund, the need to adapt to new climatic conditions. Recommendations for the development of the industry and ensuring its international competitiveness include diversification of export markets, increased government support for the agricultural sector, the introduction of new technologies and strengthening of logistics infrastructure. In addition, the development of agricultural insurance and increased investment in the processing industry are crucial to increasing the added value of agricultural products.

Further research in this area. Further development requires an in-depth definition of the possibilities of using modern digital technologies for the post-war restoration of the territories of Ukraine and the possibilities of using innovative technologies to optimize business processes in the industry.

Key words: *international competitiveness, agriculture, economic impact, international investment, logistics, strategic development, development forecasting.*

Анотація. Вступ. Український агросектор займає одну з базових складових національної економіки, проте війна кардинально змінила його позиції на світових ринках. Аналіз викликів воєнного часу та розробка пропозицій до стратегії відновлення конкурентоспроможності галузі на міжнародній арені є ключовим питанням, що потребує ґрунтовного підходу до вирішення.

Мета. Метою дослідження є вдосконалення науково-методологічних основ та розробка практичних рекомендацій щодо забезпечення міжнародної конкурентоспроможності аграрного сектору України в умовах війни.

Матеріали і методи. Дослідження проводилося на основі критичного аналізу теоретичних підходів щодо визначення сутності міжнародної конкурентоспроможності. Для виявлення динаміки розвитку українського агросектору було застосовано економіко-статистичні методи для опрацювання даних Державної служби статистики України. Детальний аналіз даних Продовольчої та сільськогосподарської організації ООН, Державної служби зайнятості України та Державної служби статистики України, а також наукові та аналітичні роботи вітчизняних та закордонних фахівців дозволили визначити основні конкурентні позиції та загрози розвитку українського агросектору. Методи сценарного моделювання були задіяні при побудові трьох можливих сценаріїв розвитку агросектору України. На основі системного підходу були запропоновані рекомендації щодо забезпечення міжнародної конкурентоспроможності даного сектору економіки.

Результати. У ході дослідження було доведено, що аграрний сектор України є стратегічно важливою складовою національної економіки та має значний потенціал для подальшого розвитку за умови впровадження ефективних державних та приватних ініціатив. Після початку війни стан розвитку сільського господарства зазнав значних змін, проте частка його

у ВВП залишається стабільною. Визначено, що основними культурами у виробництві та експорті України є пшениця, кукурудза та соняшник. На даний час Україна залишається одним з провідних постачальників даних культур на світовому ринку, хоча експортні маршрути та логістика суттєво зазнали впливу війни. Проведений аналіз динаміки експорту показав зростання залежності вітчизняного аграрного сектору від міжнародних ринків. Зміна основних імпортерів української продукції зумовлена як економічними факторами, так і геополітичними змінами.

Побудовані сценарії розвитку галузі визначають перспективи відновлення виробництва та експорту агропродукції за умов оптимістичного, песимістичного та стриманого (реалістичного) варіантів. Реалістичний сценарій, який є найбільш ймовірним за експертними оцінками, передбачає поступове відновлення, але вимагає активних заходів державної підтримки.

У ході дослідження систематизовано основні виклики, з якими стикається сільськогосподарський сектор, а саме: перебої в логістиці, зростання виробничих витрат, зміни в земельному фонді, необхідність адаптації до нових кліматичних умов, тощо. Рекомендації щодо розвитку галузі та забезпечення її міжнародної конкурентоспроможності включають диверсифікацію експортних ринків, посилення державної підтримки сільськогосподарського сектору, впровадження нових технологій та зміцнення логістичної інфраструктури. Окрім того, розвиток сільськогосподарського страхування та збільшення інвестицій у переробну промисловість мають вирішальне значення для підвищення доданої вартості сільськогосподарської продукції.

Перспективи. Подальшого розвитку потребує поглиблене визначення можливостей застосування сучасних цифрових технологій для післявоєнного відновлення територій України та можливостей застосування інноваційних технологій для оптимізації бізнес-процесів у галузі.

Ключові слова: міжнародна конкурентоспроможність, сільське господарство, економічний вплив, міжнародні інвестиції, логістика, стратегічний розвиток, прогнозування розвитку.

Statement of the problem. The agricultural sector plays a key role in Ukraine's economy as a source of foreign exchange earnings, provides a significant number of jobs and helps stabilize the country's trade balance. However, Russia's full-scale invasion of Ukraine in 2022 had a significant impact on the development of the agricultural sector. The loss of fertile land, the destruction or even destruction of infrastructure, restrictions on existing logistics routes, and increased production costs in the sector have threatened not only the sector's export opportunities but also its stability in general. Nevertheless, the agricultural sector remains one of the main pillars of Ukraine's economy, demonstrating resilience and rapid adaptability to new conditions. Entering the EU market requires high-quality standards, environmental compliance, and production transparency. To succeed, Ukraine must boost product competitiveness through modern technology, automation, and eco-friendly production in line with EU regulations. The agricultural sector will play a key role in strengthening Ukraine's global market position.

Analysis of recent research and publications. Competitiveness is one of the key categories that is widely used both in theoretical research and in business practice. This is a multifaceted concept, which, according to its Latin origin, means rivalry or struggle for achieving the best results. Important for understanding the essence of corporate competitiveness are the works of M. Porter, the author of the theory of competitive advantages. This theory allows you to assess the level of competitiveness of an enterprise within a certain industry among other companies [1]. Theoretical approaches to defining the essence of the concept of competitiveness were further investigated by scientists [2; 3] in their articles. Scientific article [4] deals with the use of index analysis for the assessment of the competitiveness of national food products within the system of

international agri-food production competitiveness. The issue of ensuring national food security in the context of globalization processes is investigated by Yu. Okhota [5]. Individual issues of increasing the level of competitiveness of enterprises are considered by scientists in articles [6-11]. L. Stepasyuk and Z. Titenko investigate the domestic market for agricultural products and the dynamics of exports of the industry's products [12]. The article [13] presents the results of a study of individual indicators characterizing the efficiency of the use of natural resources by agricultural producers, and groups enterprises by the size of the harvested area of the main agricultural crops. The features of the formation of agricultural competitiveness on the example of China are given in the article [14]. The article [15] is devoted to the study of the management of the competitiveness of agricultural entities in the context of the transformation of agricultural supply chains. The dynamics of changes in the level of competitiveness of agriculture in the EU countries are studied by scientists in the article [16]. Many works of scientists are devoted to the issue of forming the international competitiveness of the industry, however, the features of forming the strategic development of the agricultural sector of Ukraine remain unexplored.

The purpose of the study is to develop the theoretical and methodological foundations and practical recommendations for ensuring the international competitiveness of the agricultural sector of Ukraine in the context of war.

Materials and methods. The study was conducted on the basis of a critical analysis of theoretical approaches to determining the essence of international competitiveness. To identify the dynamics of the development of the Ukrainian agricultural sector, economic and statistical methods of processing data from the State Statistics Service of Ukraine [17] were used. A detailed analysis of data from the Food and Agriculture Organization of the United Nations [18], the State Employment Service of Ukraine [19] and the State Statistics Service of Ukraine [17], as well as scientific and analytical works of domestic and foreign experts [4-13] allowed us to determine the main competitive positions and threats to the

development of the Ukrainian agricultural sector. Scenario modeling methods were used to build three possible scenarios for the development of the agricultural sector of Ukraine. Based on the systems approach, recommendations were proposed to ensure the international competitiveness of this sector of the economy.

Presentation of the main results of the research. Ukraine possesses exceptionally favourable natural conditions and resource base for the development of agricultural production. Fertile black earth soils occupy half of the country's territory, with another 14% consisting of highly productive chestnut soils [20]. The structure of the country's agricultural production is dominated by three main crops: wheat, corn, and sunflower, which are grown primarily for export. Medium-sized enterprises dominate crop production, although some companies cultivate areas of up to 500,000 hectares. This structure has been formed as a result of Soviet collectivization and agricultural policies of the independence period. Only recently has Ukraine begun liberalizing the land market [9].

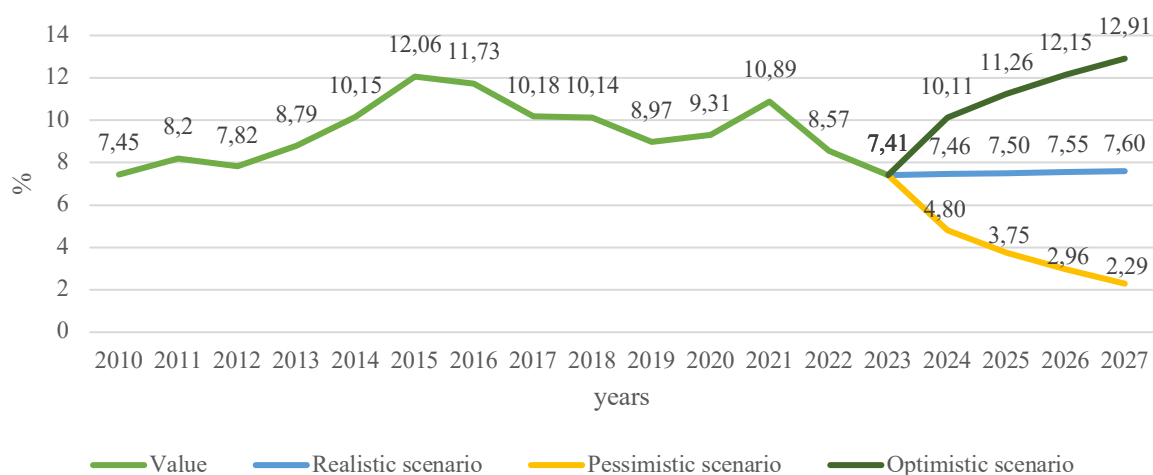


Fig. 1. Share of agriculture in Ukraine's GDP in 2010-2023 and forecast for 2024-2027, %

Source: created by the authors based on [17]

Agriculture is an important part of Ukraine's economy, which was growing until the Russian invasion in 2022. Figure 1 presents the share of agriculture in Ukraine's GDP for 2010-2023 and forecasts for subsequent years.

We see, that until 2021, an upward trend was observed with fluctuations in individual years. As of 2021, the agricultural sector accounted for approximately 10,9% of Ukraine's GDP, but in 2022 a decline to 8,57% was recorded, and in 2023 – an even more significant drop to 7,41%. Since the beginning of Russia's full-scale invasion of Ukraine, the agricultural industry has suffered substantial losses. The UN Food and Agriculture Organization estimates damage to rural households at around USD 2,25 billion, with crop production suffering the greatest losses. Military actions have led to reduced food production and trade, which has exacerbated food security problems both in Ukraine and globally [18].

Using Excel forecasting tools, three possible scenarios for Ukraine's agricultural development were developed. The optimistic scenario assumes rapid growth in productivity and exports provided that supply chains are restored. The pessimistic scenario is based on a possible significant reduction in industry output due to decreased agricultural land as a result of war, aggravated resource supply problems, and loss of competitiveness. The realistic scenario is based on the assumption of gradual industry recovery after the 2023 decline. Based on expert assessments, the probability of each scenario was determined: optimistic – 20%, realistic – 60%, pessimistic – 20%. According to the realistic forecast, the share of agricultural products grows steadily by 0,05% annually and reaches 7,60% in 2027. Under the optimistic scenario, the share of agricultural products will grow rapidly, approaching 2021 levels in the early years, and reach 12,91% in 2027. Under the pessimistic scenario, the share will decline annually to 2,29% in 2027.

Agricultural product exports are one of the most important aspects of national economic development, as they contribute to gross domestic product growth, provide employment, and help improve trade balances. Let us examine the volumes of agricultural exports and their share in total exports for 2013-2023, as well as volume forecasts through 2027 (Figure 2).

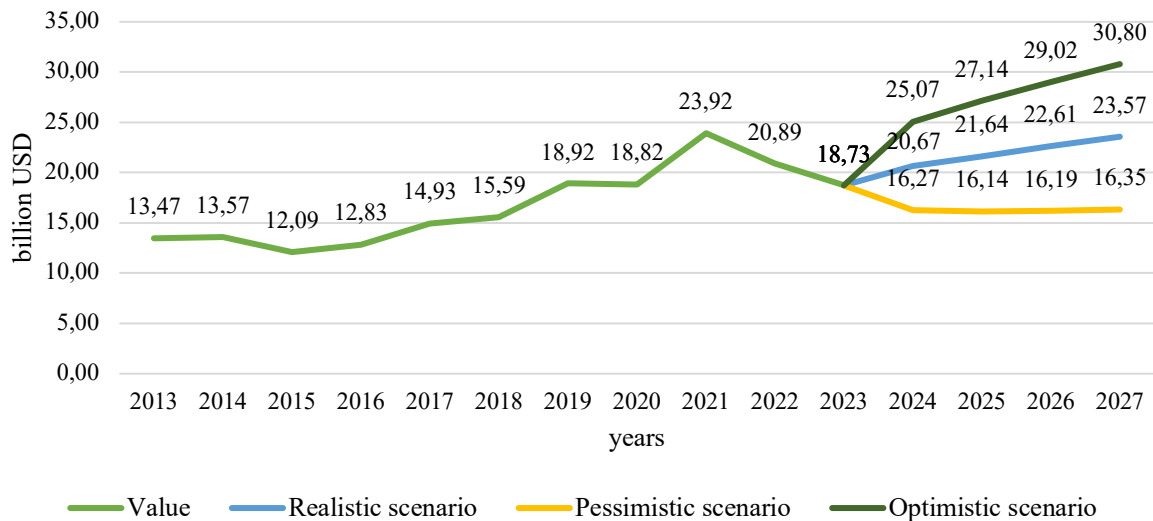


Fig. 2. Dynamics of Ukraine's agricultural exports in 2013-2023 and forecasts for 2024-2027, in billion USD

Source: created by the authors based on [17]

The conducted research allowed to identify the main obstacles to increasing the competitiveness of the Ukrainian agricultural sector and the prospects for improvement. A number of economic, political and institutional problems are the main factors that reduce the competitiveness of Ukrainian agricultural enterprises. Among them are regulatory instability in the agricultural sector, price disparity between industrial and agricultural products, declining quality of labour, lack of international quality certificates for domestic producers, and the negative impact of political and economic risks on the activities of agricultural producers [6; 7; 10]. Additionally, insufficient financial resources for capital investments and innovation initiatives pose significant barriers to sectoral advancement [10; 11].

In order for Ukrainian agriculture to remain competitive in an increasingly complex global marketplace, it is essential to streamline operational expenses, invest in modern technological solutions and diversify export destinations. This requires a systematic approach to reducing costs at all levels of agricultural production. Streamlining operational expenses involves optimising supply chain management, reducing bureaucratic burdens and implementing energy-efficient

technologies that can significantly reduce production costs while maintaining output quality.

Investment in modern technological solutions is a cornerstone of agricultural modernisation. This includes adopting precision agriculture techniques, implementing automated irrigation systems, utilising satellite monitoring for assessing crop health, and integrating artificial intelligence for predictive analytics in farming operations. Such technological advancements improve productivity, enhance resource efficiency, and promote environmental sustainability.

Given the geopolitical instabilities affecting traditional trade routes, diversification of export destinations has become increasingly critical. This diversification strategy should involve developing specialised products tailored to specific regional preferences and establishing long-term contractual agreements with international buyers.

Particular attention should be paid to more profitable crops, such as cereals and sunflower seeds, which have historically demonstrated strong market demand and competitive advantages. Ukraine's natural resources, including fertile black soil and favourable climate conditions, provide exceptional opportunities to maximise yields in these sectors. However, this focus must be balanced with sustainable farming practices to ensure the long-term health and productivity of the soil.

Military conflict and economic turbulence in Ukraine have generated new challenges that further undermine agricultural enterprise competitiveness. The main ones include: the impossibility of strategic planning due to the ongoing hostilities, reduced production capacity due to territorial, machinery, and equipment losses, and a decline in positions on world markets as Ukrainian exports are replaced by goods from Canada and the EU. In addition, the war has disrupted logistics routes and resulted in an embargo on products from Ukraine, Poland, Romania and Slovakia. These trade restrictions, implemented to protect

domestic agricultural sectors, have reduced available market outlets and increased competition for remaining export destinations. Inflation is also driving up business costs, reducing the competitiveness of products due to the rise in the cost of imported seeds and fertilisers. Limited financing access, falling international commodity prices, and halted technological and innovation upgrades present additional industry challenges. Falling international commodity prices, combined with increased production costs, have squeezed profitability further and reduced the attractiveness of agricultural investment. Without continued investment in modernisation and efficiency improvements, Ukrainian agricultural enterprises risk falling behind in terms of productivity and quality standards, which would make post-war recovery even more challenging.

To enhance the competitiveness of agricultural enterprises, several measures must be implemented to optimise production processes and facilitate adaptation to evolving market conditions. The conducted research allowed us to systematize the main strategies that can improve the competitiveness of agricultural enterprises, including:

- studying consumer behaviour trends and realistic assessment of their expectations, which allows timely forecasting of demand and adjusting production strategies accordingly;
- ensuring high-quality products and their compliance with the price-quality ratio for target consumer groups;
- implementing effective marketing policy that allows companies to maintain and increase their market share;
- optimising costs through the rational use of key inputs, which reduces costs and increases efficiency;
- advancing technological and management capabilities, which is essential for maintaining competitiveness and market adaptation. Enhanced mechanisation improves productivity, minimises losses and costs, and strengthens both domestic and international market positions;

- developing innovation strategies and strategic planning for production and marketing activities;
- providing funding for research institutions and organisations that provide seed and other resources.

Given the consequences of the large-scale invasion in 2022, the agricultural sector suffered significant losses, which affected its competitiveness. The authors believe that given the role of the agricultural sector in the economy of Ukraine, its full recovery is impossible without state support, which can be focused on the following key areas:

- rebuilding critical transport infrastructure, including railways, roads and waterways to enhance logistics and restore exports capacities;
- accelerating the demining of agricultural land, in particular in the liberated areas, which will allow for the resumption of land use;
- establishing new terminals for handling agricultural products and improvement of infrastructure capacity at the EU borders;
- increasing the level of processing of agricultural raw materials, which will add value and expand the export opportunities of agricultural enterprises;
- prioritising the development of the livestock sector requires investment and modern technologies to increase production efficiency;
- expanding the use of alternative energy sources (e.g., the introduction of solar and wind power plants at agricultural enterprises) to reduce energy dependence and enhance environmental sustainability.

In addition to these measures, it is important to increase the level of human resources in the agricultural sector and attract investments in the latest technologies, which will increase production efficiency, reduce costs and improve product quality.

Conclusions of this research and prospects for further research in this area. The following results were obtained during the study. Analysis of statistical data proves the thesis that the agricultural sector is of significant importance to

Ukraine's national economy. In particular, the agricultural sector's share of GDP has remained stable, although it has recently been affected by military operations and changes in the global market. The main crops produced and exported by Ukraine are wheat, corn and sunflowers.

The study proved that agricultural products are one of the most important sources of foreign currency earnings from exports. However, due to the impact of the war, traditional logistics chains were damaged, sales markets changed, and other negative transformations occurred, which has affected the industry's competitiveness.

Following a comprehensive analysis of the factors affecting the development of the Ukrainian agricultural sector, three scenarios were developed to forecast the industry's future development. Under a realistic scenario, the agricultural sector's share of Ukraine's GDP will grow slowly in the short term, requiring active state support measures.

The authors have identified the main challenges facing the agricultural sector: disruptions to logistics, increased production costs, changes to the land fund and the need to adapt to new climatic conditions. To overcome these challenges, the following recommendations were provided: diversification of export markets; increased state support for the agricultural sector; introduction of new technologies; strengthening of logistics infrastructure; and activation of investment attraction, including international investment, in building a full cycle of agricultural production.

Further development requires an in-depth definition of the possibilities of using modern digital technologies for the post-war restoration of the territories of Ukraine and the possibilities of using innovative technologies to optimize business processes in the industry.

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