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ECONOMIC EFFICIENCY OF THE DEVELOPMENT OF MICRO-ENTERPRISES ENGAGED IN GRAPE PRODUCTION AND THEIR ADAPTATION TO WAR CONDITIONS
ЕКОНОМІЧНА ЕФЕКТИВНІСТЬ РОЗВИТКУ СУБ'ЄКТІВ МІКРОПІДПРИЄМНИЦТВА З ВИРОБНИЦТВА ВИНОГРАДУ ТА ЇХ АДАПТАЦІЯ ДО УМОВ ВОЄННОГО ЧАСУ

Summary. *Introduction. Intensifying the activities of entrepreneurial structures involved in grape production is very important for the survival of entrepreneurial producers in rural areas and for ensuring food security in the country as a whole.*

Purpose. The purpose of this article is to assess and justify, from a systemic approach, the economic efficiency and adaptability of micro-enterprises engaged in grape production during wartime.

Materials and methods. The research materials include works by scholars on the functioning of agricultural production enterprises and official statistical data on the state and trends in the development of agribusiness entrepreneurs. The methodological basis of the study was provided by the provisions of systemic-functional analysis and institutional economic theory. Graphical, logical, and monographic methods, as well as approaches to abstraction and synthesis of research results, were used.

Results. The assessment of the state and development of micro-enterprises engaged in grape growing has been established. The special socio-economic significance of micro-enterprises engaged in grape growing as those that quickly adapt to the crisis has been confirmed. The number of active micro-enterprises engaged in grape growing and the number of employees in 2014–2024 have been revealed; the main indicators of economic activity of active micro-enterprises engaged in grape growing for 2020–2024 have been revealed. The unprofitability of micro-enterprises engaged in grape growing under martial law and its causes are highlighted. The peculiarities of the profitability of the economic activities of micro-enterprises engaged in grape growing are revealed. It is substantiated that the goal of the development strategy for micro-enterprises engaged in grape growing is to increase income and improve the socio-economic efficiency of their operations, and that the development of micro-enterprises engaged in grape growing ensures added value growth through the processing of raw materials and innovative production upgrades.

Further research in this area. In further systematic research, adjustments should be made to the strategic directions of socio-economic adaptation of micro-

enterprises engaged in grape production by individual entrepreneurs and private farms in the context of post-war economic reconstruction.

Key words: *entrepreneurship, micro-enterprise, production, economic efficiency, adaptation of development, crisis.*

Анотація. *Вступ. Активізація діяльності підприємницьких структур з виробництва винограду має дуже важливе значення для виживання підприємців-виробників на селі та гарантування продовольчої безпеки країни в цілому.*

Мета. Мета написання статті – оцінити та обґрунтувати з позицій системного підходу особливості економічної ефективності та адаптивності розвитку суб'єктів мікропідприємництва з виробництва винограду в умовах воєнного часу.

Матеріали і методи. Матеріалами дослідження є праці науковців з проблем функціонування суб'єктів підприємництва з виробництва сільськогосподарської продукції, офіційні статистичні матеріали стосовно стану та тенденцій розвитку підприємців аграрного бізнесу. За методологічну основу дослідження слугували положення системно-функціонального аналізу та інституціональної економічної теорії. Використано графічні, логічні, монографічні методи, підходи абстрагування та синтезу результатів дослідження.

Результати. Встановлена оцінка стану та розвитку суб'єктів мікропідприємництва з вирощування винограду. Підтверджено особливе соціально-економічне значення суб'єктів мікропідприємництва з вирощування винограду як таких, що швидко адаптуються до кризи. Розкрито кількість діючих суб'єктів мікропідприємництва з вирощування винограду та зайнятих працівників у 2014–2024 рр.; основні показники економічної діяльності діючих

суб'єктів мікропідприємництва з вирощування винограду за 2020–2024 рр. Підкреслено збитковість функціонування суб'єктів мікропідприємництва з вирощування винограду в умовах воєнного стану та їх причини. Виявлено особливості рентабельності господарської діяльності суб'єктів мікропідприємництва з вирощування винограду. Обгрунтовано, що метою стратегії розвитку суб'єктів мікропідприємництва з вирощування винограду є зростання доходів та підвищення соціально-економічної ефективності функціонування, а розвиток суб'єктів мікропідприємництва з вирощування винограду забезпечує приріст доданої вартості шляхом переробки сировини та інноваційного оновлення виробництва.

Перспективи. В подальших системних дослідженнях слід внести корективи щодо стратегічних напрямів соціально-економічної адаптації суб'єктів мікропідприємництва з виробництва винограду фізичними особами-підприємствами та особистими селянськими господарствами в умовах післявоєнної відбудови економіки.

Ключові слова: *підприємництво, субєкт мікропідприємництва, виробництво продукції, економічна ефективність, адаптація розвитку, криза.*

Statement of the problem. In 2024, there were only 64 micro-enterprises engaged in grape growing and 171 employees working in these enterprises in Ukraine. This is 35.35% less than the number of active micro-enterprises in 2021 before the war. Micro-enterprises engaged in grape production operate in harsh market conditions and the country's economic crisis. On 22 August 2024, Law of Ukraine No. 3928-IX 'On Grapes, Wine and Grape Products' (2024) was adopted [14]. The purpose of its adoption is to introduce a unified state system for registering grape producers and to expand opportunities for state support for viticulture.

Analysis of recent research and publications. Multilateral theoretical and methodological provisions and positions regarding the organisational, managerial, socio-economic, financial and credit efficiency of the development of entrepreneurial structures at various levels of the economic hierarchy in crop production in the agricultural business in times of crisis are revealed in various ways in the research of economists. We agree with the positions of scientists I. Shevchenko, N. Nikonchuk (2022) [22], who substantiated the bioenergy efficiency of various drip irrigation regimes for grapes with the aim of developing ways to save resources and costs for grape growing businesses. From the perspective of scientists O. Kovbasa and A. Maksychka (2023) [10], it has been established that small businesses are most adaptable to the introduction of modern technological innovations, organisational logistics initiatives, and global product quality standards. We agree with the group of scientists W. Ma et al. (2023) [16] that the association of entrepreneurs into agricultural cooperatives for crop production increases the possibility of using environmentally friendly methods of pest control. Scientists O. Valerien et al. (2024) [25] focus on the diversification of income sources from the perspective of the survival strategy of small farmers who grow crops. We also support the position of scientists A. Baba and A. Awudu (2024) [2] that crop diversification reflects the viable survival strategy of business entities, their adaptation to climate change, reduction of crop loss risks, and increased profitability for farmers.

The results of research by F. Bareille and R. Chakir (2024) [3] deserve attention, as they revealed the adaptive and agronomic effects of climate change on the biophysical state of plants. We confirm the conclusions of economist N. Safonik (2024) [21] that one of the strategic directions for the sustainable development of the socio-economic mechanism of business entities is the active use of environmentally friendly technologies in production. We also support the results of

research by a team of scientists led by A. Haleeva et al. (2024) [6], which proved that the use of modern technologies affects the increase in crop yields, improvement in the quality of various grape varieties, reduction in diseased plants and reduction in vineyard processing costs (use of DJI Agras T30 drones and AgriSpray 5000 sprayers). We positively regard the positions of scientists V. Stamat and A. Diachenko (2024) [23], who developed and used their own model of crop production management system, which actualises the activities of information and software mechanisms and the effectiveness of human resources use. Economists V. Kostenko and R. Hrynyk (2024) [9] have substantiated that the country does not have sufficient resources for the development of industrial vineyards. A group of scientists led by R. Pérez-Vas et al. (2024) [19] drew attention to the implementation of adaptation processes by grape growers to changes in the business environment in order to increase flexibility and optimisation in the management decision-making system and in the implementation of precision farming mechanisms.

A group of scientists led by J. Greyling et al. (2025) [5] emphasises that the efficiency of crop production by business entities depends on climatic risks, geographical areas of cultivation, and food security policy directions in the country. We agree with the position of scientists R. Ibirenoye et al. (2025) [7] that the cultivation of various agricultural crops by business entities has a positive impact not only on increasing yields but also on reducing the use of pesticides. In addition, economists O. Mykolayovych and V. Tymchak (2025) [18] draw attention to the need to introduce new technologies for soil cultivation (no-till and strip-till) and sowing. We also support the research results of B. Dost & Ja. Papula (2025) [4], who proved that the use of control processes by family businesses reduces business risks, cuts costs and increases profitability. We confirm the conclusions of the group of scientists K. Ayouba et al. (2025) [1], which substantiate that agricultural

cooperation between producers has the greatest impact on increasing the yield of different grape varieties.

Economists D. May et al. (2025) [17] also proved the need to integrate small farmers growing crops into agricultural associations in order to increase production volumes, reduce overall costs, and increase welfare and profitability from farming. A group of scientists, S. Kravchenko, M. Malik, O. Shpykuliak (2025) [11, 12], substantiated the special importance of integration associations of small and micro-enterprises in agriculture for survival. Scientists I. Pergner and C. Lippert (2025) [20] assess the risks, variable costs, yields, prices, and socio-economic performance of using different farming systems (traditional, with mineral fertilisers, organic, without pesticides). A group of authors, M. Lefebvre et al. (2025) [15], argue that the introduction of a green insurance system into the enterprise management mechanism is an innovative insurance product that reduces the likelihood of grapevine diseases and stimulates the development of organic farming and the minimisation of pesticide use. We support the position of economist I. Kormyshkina (2025) [8], who proved the need for state support for grape growers, the development of clusters of grape growing and wine producing enterprises, the improvement of innovative technologies, and adaptation to EU standards and regulatory requirements.

The purpose of this article is to assess and substantiate, from a systemic approach, the economic efficiency and adaptability of micro-enterprises engaged in grape production during wartime.

Materials and methods. The research materials include works by scientists on the functioning of agricultural production enterprises and official statistical data on the state and trends in the development of agribusiness entrepreneurs. The methodological basis of the study was provided by the provisions of systemic-functional analysis and institutional economic theory. Graphical, logical,

monographic methods, approaches to abstraction and synthesis of research results were used.

Presentation of the main material of the study. The active development of existing entrepreneurial structures engaged in crop production in Ukraine is regulated by state-established rules for economic management in the current extreme market environment, which determine the characteristics and indicators of the socio-economic development of agricultural business entities. On 2 September 2024, Law of Ukraine No. 3869-IX of 17 July 2024 'On Amendments to Certain Laws of Ukraine Regarding the Simplification of Conditions for Conducting Economic Activities During the Period of Martial Law in Ukraine' (2024) [13] came into force.

There is currently no accurate data on the number of micro-entrepreneurs involved in grape growing in Ukraine in 2025. In total, there are 160 businesses of various levels of hierarchy operating in 2025, 40 of which are craft wineries. The total area of vineyards is approximately 30,000 hectares. The development of small family wineries, or châteaux, has intensified. The most popular grape varieties for cultivation are Cabernet Sauvignon, Chardonnay, and Aligoté. It has been established that in 2024, there were 64 active micro-enterprises engaged in grape growing. This is 47.54% less than in 2014 and 35.35% less than in 2021. However, in 2024, the number of employees at active micro-enterprises engaged in grape growing decreased by 31.05% compared to 2021 (Figure 1).

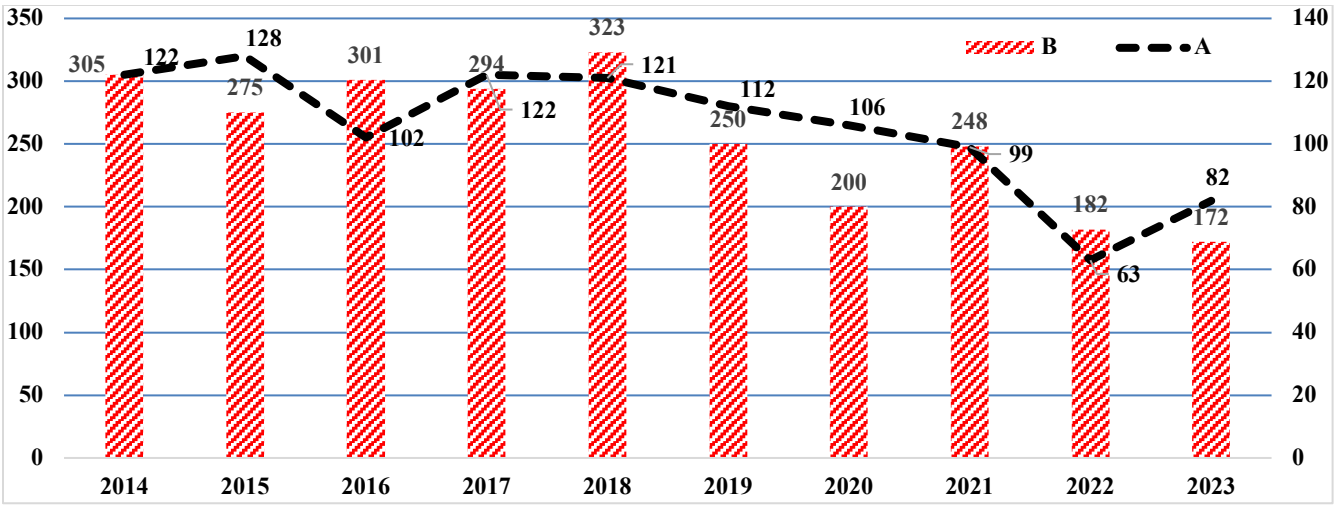

Figure 1. Number of active micro-enterprises engaged in grape growing and number of employees in 2014–2024, *units*

Note: A – Number of active micro-enterprises engaged in grape growing; B – Number of employees in active micro-enterprises engaged in grape growing.

Source: compiled using [24]

In 2024, compared to 2021, the volume of production decreased by –42.00%; the volume of sales decreased by –37.57%; and the net loss reached –45.9293 million hryvnias. In 2024, current assets, current liabilities and provisions, equity capital and non-current assets increased. Production costs, material costs and service costs, labour costs, social security contributions and general personnel costs decreased (Table 1).

Table 1

Key economic indicators of active micro-enterprises engaged in grape growing for 2020–2024 (million UAH; in constant 2016 prices; at the end of the year)

Indicators	2020	2021	2022	2023	2024	2024 in % up to 2021
Volume of production	32,1935	**114,3356**	101,7454	94,1064	**66,3100**	**–42,00**
Volume of sales	34,0564	**105,6326**	79,0645	73,6707	**65,9420**	**–37,57**
Net profit (loss)	-22,4363	**1,5580**	-17,9953	-3,8336	**-45,9293**	**–29,5***
Non-current assets	166,1966	**149,3295**	188,2163	190,8739	**319,3785**	**+113,8**

Current assets	149,2932	**202,5831**	324,0879	407,9085	**618,7999**	**+205,5**
Current liabilities and provisions	119,0636	**147,3607**	256,5525	285,7481	**432,8499**	**+193,7**
Equity	160,7128	**168,8066**	198,1779	253,5652	**477,6360**	**+182,9**
Production costs	42,3371	**95,2089**	89,5320	73,2315	**72,2256**	**–24,14**
Material costs and costs of services	27,2949	**67,3713**	56,7440	48,1735	**49,8610**	**–25,99**
Depreciation	6,1127	**14,5243**	16,9703	12,4464	**12,5882**	**–13,33**
Labour costs	6,5391	**8,7576**	10,0774	9,6341	**7,6452**	**–12,70**
Social security contributions	1,7142	**2,4524**	2,5841	2,4826	**2,1312**	**–13,09**
Personnel costs	8,2533	**11,2100**	12,6615	12,1167	**9,7764**	**–12,79**

Note: * – number of times.
Source: compiled using [24].

In 2024, compared to 2021, the profitability of the operating activities of micro-enterprises engaged in grape growing decreased to –34.1%, and the profitability of all activities of micro-enterprises engaged in grape growing decreased to –32.2%. It has been established that since 2018 (except for 2021), the activities of existing micro-enterprises engaged in grape growing have become unprofitable and unviable.

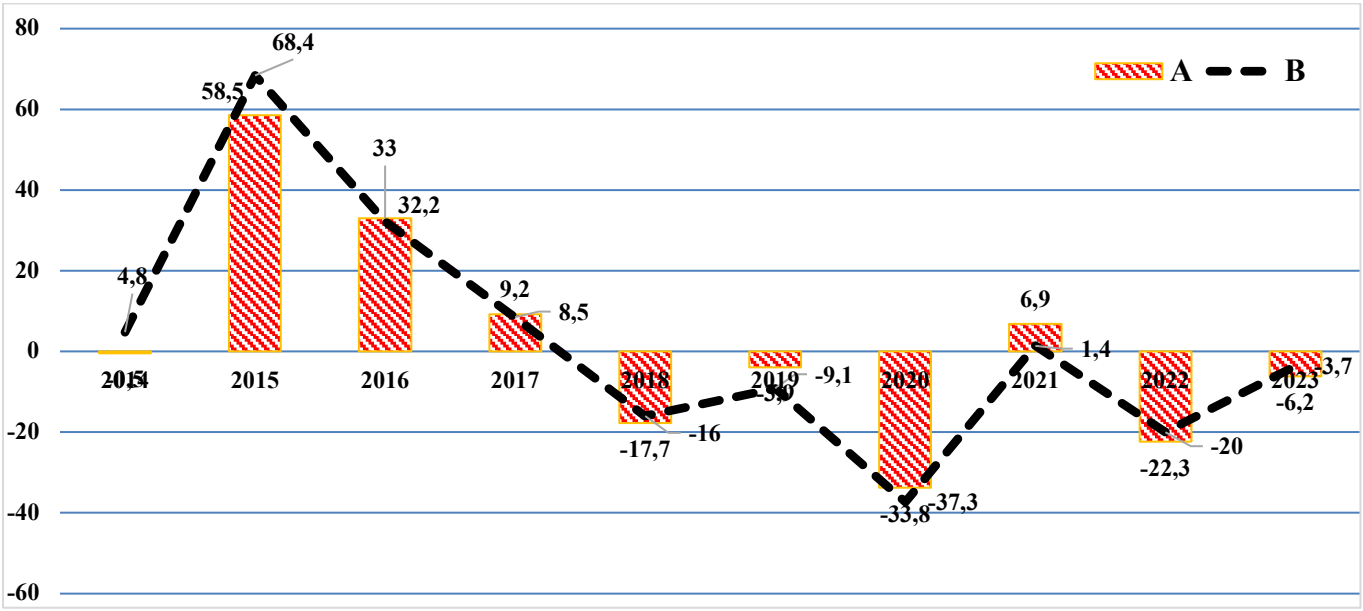

Figure 2. Dynamics of changes in the profitability of operating and overall activities of micro-enterprises engaged in grape production in 2014–2024, *%*

Note: A – Level of profitability of the operating activities of micro-enterprises engaged in grape growing; B – Level of profitability of the overall activities of micro-enterprises engaged in grape growing
Source: compiled using [24]

Micro-enterprises engaged in grape growing are the most motivated. Small business structures have certain advantages in terms of activity and survival. The goal of the development strategy for micro-enterprises engaged in grape growing is to increase income and improve the socio-economic efficiency of their operations, while the development of micro-enterprises engaged in grape growing ensures added value through the processing of raw materials and innovative production upgrades. However, in wartime conditions, conditions are needed to strengthen their socio-economic potential and increase their resilience, adaptability and competitiveness. The following obstacles remain to the development of micro-enterprise structures in the agricultural business: the risks of starting a micro-enterprise; low liquidity of property; complications in the logistics infrastructure; and the weak level of development of information and advisory support for entrepreneurship in rural areas.

Conclusions of this research and prospects for further research in this area. Assessments of the state and development of micro-enterprises engaged in grape growing have confirmed their special socio-economic significance as entities that respond quickly to changes in the market environment in the agricultural business under extreme operating conditions. The peculiarities of the profitability of their economic activities have been revealed. It has been established that the activities of micro-enterprises engaged in grape growing ensure the fulfilment of their functions in conditions of martial law. The goal of the development strategy is to increase income and improve the socio-economic efficiency of functioning. The development of micro-enterprises engaged in grape growing ensures an increase in added value through the processing of raw materials and innovative modernisation of production.

In further systematic research, adjustments should be made to the strategic directions of socio-economic adaptation of micro-enterprises engaged in grape

production by individual entrepreneurs and private farms in the conditions of post-war economic reconstruction.

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