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Abstract:

Rapid urbanization in Ho Chi Minh City has placed increasing pressure on suburban agricultural areas, particularly in relation to land-use conversion, production restructuring, and the sustainability of rural livelihoods. This study examines agricultural economic development in seven northwestern communes of Ho Chi Minh City, namely Cu Chi, Tan An Hoi, Thai My, An Nhon Tay, Nhuan Duc, Phu Hoa Dong, and Binh My, formerly belonging to Cu Chi District. These communes contain one of the largest agricultural land areas in the city and play an important role in the development of urban agriculture, high-tech agriculture, and sustainable agricultural models. The paper analyzes the transformation of the agricultural economy in these communes in the context of urbanization and the restructuring of Ho Chi Minh City's agricultural sector. Compared with previous domestic studies, this research contributes commune-level empirical evidence and provides a more specific understanding of how urbanization affects agricultural production, land use, economic efficiency, and farmers' livelihoods in a suburban area of a rapidly growing metropolis. The findings indicate that agricultural economic development in the northwestern communes of Ho Chi Minh City should not be viewed separately from broader urban development, land-use planning, and agricultural restructuring policies. While the area has considerable potential for high-value, ecological, and technology-based agriculture, it also faces challenges related to fragmented production, limited investment capacity, unstable markets, and pressure from urban expansion. Based on these findings, the paper proposes several policy orientations and practical solutions to improve the efficiency, sustainability, and adaptability of local agricultural economic development in the coming period.

Keywords: Agricultural economic development; Urbanization; suburban communes; urban agriculture; high-tech agriculture; Ho Chi Minh City.

1. Theoretical basis and research methods

1.1. Theoretical basis: Agriculture remains a fundamental sector for socio-economic development, particularly in developing countries, where it contributes to food security, employment generation, income improvement, and social stability. In the context of globalization, climate change, and rapid urbanization, agricultural development is no longer limited to production growth but is increasingly associated with environmental protection, ecological balance, rural livelihoods, and sustainable development. However, traditional agricultural models based mainly on land expansion and resource exploitation have revealed significant limitations, including land degradation, environmental pollution, low productivity, and weak economic efficiency. As a result, agricultural restructuring toward higher added value, technological application, ecological farming, and sustainable production has become an essential development direction. In Vietnam, agricultural restructuring has been promoted through major policies aimed at modernization, sustainability, productivity improvement, and value-added enhancement. For Ho Chi Minh City, a rapidly urbanizing special urban area, agriculture has a distinctive role. Although urbanization has reduced agricultural land, it has also created new opportunities for urban agriculture, high-tech agriculture, ecological agriculture, and safe food supply systems. The northwestern area of Ho Chi Minh City, formerly Cu Chi District, possesses one of the city's largest agricultural land areas and remains an important agricultural production zone. Nevertheless, previous domestic studies have mainly focused on rural development, agricultural tourism, and general orientations for urban agriculture, while limited attention has been given to how urbanization affects the structure, efficiency, and sustainability of agricultural economics at the local level. Based on this research gap, the paper analyzes agricultural economic development in the northwestern communes of Ho Chi Minh City during the period 2014–2024. The study evaluates the achievements, limitations, and underlying causes of agricultural transformation in the context of urbanization and agricultural restructuring. The findings show that the agricultural economy has gradually shifted away from traditional food crops toward high-tech, ecological, and urban agricultural models. However, production remains largely small-scale and household-based, while value chain linkages are still weak and the application of science and technology remains uneven across household groups and local areas. The paper therefore proposes development orientations and practical solutions to improve the efficiency, sustainability, and adaptability of agricultural economic development in inland communities under urbanization pressure.

1.2. Research Methodology: This study employs a combination of qualitative and descriptive statistical methods to examine factors affecting agricultural economic development in inland communities under the pressure of urbanization, with a focus on the northwestern communes of Ho Chi Minh City. Qualitative methods, including scientific abstraction, synthesis and analysis, and the historical-logical method, are used to systematize the theoretical foundations of agricultural economic development, agricultural restructuring, and urban agriculture. These methods also help clarify the relationship between urbanization, land-use change, production transformation, and rural livelihoods. In addition, the study uses secondary data collected from reports, policy documents, and statistical sources related to agricultural development in Ho Chi Minh City and the former Cu Chi District during the period 2014–2024. These data are analyzed to identify changes in agricultural land use, crop and livestock structure, production organization, and the development orientation of local agriculture.

To strengthen the empirical basis of the research, the author conducted a survey of 300 farming households, cooperatives, and agricultural production groups in the northwestern communes of Ho Chi Minh City. The survey focused on key issues such as production scale, income, technology adoption, participation in cooperatives, market access, production difficulties, and farmers' perceptions of high-tech agriculture. Descriptive statistics were then used to process and analyze the survey results, thereby reflecting the current situation of agricultural production, economic efficiency, value chain linkages, and factors constraining agricultural economic development. Through this methodological approach, the study constructs an overall picture of agricultural economic development in inland communities in the context of urbanization. The findings provide empirical evidence for identifying achievements, limitations, and causes in the local agricultural transformation process. On that basis, the paper proposes development orientations and policy solutions aimed at improving the efficiency, sustainability, and adaptability of agricultural economics in the northwestern communes of Ho Chi Minh City in the coming years.

2. OVERVIEW OF THE RESEARCH SITUATION

2.1. International research on agricultural economic development in the context of urbanization: In modern development economics studies, agriculture is viewed not only as a food source but also as a crucial pillar of sustainable development, poverty reduction, and social stability, especially in developing countries (Schultz, 1967). According to the World Bank (2008), agricultural growth has a strong spillover effect on rural incomes and contributes to narrowing the development gap between regions. However, rapid urbanization has fundamentally changed the spatial and methods of agricultural production. The OECD (2021) suggests that agriculture in suburban areas is gradually shifting towards urban agriculture, a multifunctional agricultural model that serves both production and environmental protection, providing ecological services to urban areas. In this context, maintaining traditional agriculture based on large areas and manual labor is becoming increasingly inefficient. FAO (2023) emphasizes that current agricultural systems are incurring many "hidden costs" related to the environment, health, and society, especially in rapidly urbanizing areas. Therefore, the trend in agricultural economic development worldwide is shifting strongly towards sustainable agriculture, ecological agriculture, and high-tech agriculture models, aiming to optimize resource utilization and reduce negative impacts on the environment. Furthermore, studies by the World Bank (2020) show that value chain linkages are a key factor determining the efficiency and sustainability of the agricultural economy. Organizing production in a value chain helps farmers reduce market risks, increase added value, and improve access to technology. However, in suburban areas, the formation of agricultural value chains often faces many obstacles due to small-scale production, fragmented land ownership, and pressure to change land use purposes. In general, international studies agree that agricultural economic development in the context of urbanization needs to be based on three main pillars: (i) restructuring production towards high value; (ii) applying science and technology and innovating production organization; and (iii) ensuring harmony between economic, social and environmental development.

2.2. Domestic research on agricultural economics and urban agriculture: In Vietnam, the issue of agricultural economic development has received attention from many researchers and policymakers in the context of industrialization and modernization. Domestic studies consistently affirm that agriculture remains crucial to the economy, particularly for the livelihoods of rural people and ensuring national food security. In recent years, the focus of research has shifted to restructuring the agricultural sector towards increasing added value and sustainable development. Decision No. 255/QĐ-TTg (2021) clearly defines the requirement to shift from an extensive to an intensive growth model, promoting the application of high technology and the development of ecological agriculture. For the Ho Chi Minh City area, many studies have approached agriculture from the perspective of urban agriculture. Nguyen Thanh Trong and Nguyen Thi Dong (2020) argue that urban agriculture in Ho Chi Minh City not only plays a role in food supply but also contributes to environmental protection, creating ecological landscapes and improving the quality of life for urban residents. The authors also emphasize the role of local policies in guiding and supporting the transformation of agricultural production models. Several recent studies have focused on specific models such as agricultural tourism, high-tech agriculture, and ecological agriculture in suburban districts. Dong Phu Hao and Ngo Thanh Loan (2023) pointed out that the development of agricultural tourism in Cu Chi district has great potential, but still faces many limitations in planning, linkages, and the production organization capacity of farmers.

Although numerous studies have addressed agriculture and agricultural economics in Ho Chi Minh City, most of these studies focus on the city level or analyze specific programs and projects. Studies evaluating the overall development of agricultural economics in the Northwest of Ho Chi Minh City in relation to urbanization are still quite limited. A review of both domestic and international studies reveals several key research gaps. Firstly, international studies primarily focus on general theoretical frameworks and experiences, failing to fully reflect the specific characteristics of suburban areas in developing countries. Secondly, domestic studies on urban agriculture in Ho Chi Minh City lack analyses of suburban communes, which are most directly and significantly impacted by urbanization. Thirdly, many studies only describe the current situation or propose general directions, without in-depth analysis of factors affecting the efficiency and sustainability of agricultural economics in the context of spatial and structural economic transformation. Stemming from these gaps, this paper focuses on analyzing the current state of agricultural economic development in the northwestern communes of Ho Chi Minh City during the period 2014-2024, clarifying the achievements, limitations, and causes in the context of urbanization. Based on this, the paper proposes orientations and solutions for agricultural economic development that are suitable to the specific characteristics of the northwestern communes of Ho Chi Minh City and the overall development strategy of Ho Chi Minh City.

3. RESEARCH RESULTS

3.1. Current status of agricultural economic development in the northwestern communes of Ho Chi Minh City: The former Cu Chi District, now comprising the communes of Cu Chi, Tan An Hoi, Thai My, An Nhon Tay, Nhuan Duc, Phu Hoa Dong, and Binh My, is located in the northwest of Ho Chi Minh City. It has a natural area of approximately 435 km², with agricultural land accounting for a large proportion. This provides favorable conditions for the development of crop cultivation, livestock farming, and diverse agricultural models. During the period 2014-2024, the agricultural economy in this area underwent significant changes in both production structure and organizational methods. A survey of 300 farming households in the former Cu Chi district revealed that the majority of agricultural production households are small and medium-sized, with scattered cultivated land. This makes mechanization, the application of high technology, and the organization of production along the value chain difficult. Although people's awareness of the role of science and technology in agricultural production is increasing, their ability to invest in and access technology remains limited due to a lack of capital and information. A significant proportion of farming households have not yet joined cooperatives or other forms of production linkages, leading to difficulties in product consumption and access to stable markets. This result is consistent with the World Bank's (2020) assessment that value chain linkages and large-scale production organization are key factors in improving the efficiency and sustainability of agriculture in the context of integration. Statistics show that the area of rice cultivation in this region is gradually decreasing, giving way to crops with higher economic value such as safe vegetables, fruit trees, and ornamental flowers. This trend is consistent with Ho Chi Minh City's general orientation on developing urban agriculture and high-tech agriculture (Ministry of Agriculture and Rural Development, 2021). In addition, concentrated livestock farming and aquaculture are also being gradually planned to minimize environmental pollution and improve economic efficiency. However, the agricultural restructuring process in the Northwest of Ho Chi Minh City is still uneven across communes. Some areas with good market access and infrastructure have quickly adopted high-tech agricultural models, while many others maintain traditional production methods with low productivity and efficiency.

Table 1. Agricultural land use structure in Cu Chi district, 2014-2024

Agricultural land	2014 (%)	2019 (%)	2024 (%)
Rice paddy land	38.5	31.2	24.6
Land for growing safe vegetables	14.8	18.6	23.4
Fruit tree land	11.2	14.5	17.8
Land for concentrated livestock farming	9.5	12.3	15.1
High-tech agricultural land	3.1	6.8	11.5

Source: Compiled from reports on the agricultural sector of Cu Chi district and processed by the author.

Table 1 shows that the agricultural land use structure in the northwestern communes of Ho Chi Minh City during the period 2014-2024 has undergone a significant shift in line with urbanization and agricultural restructuring. The proportion of rice cultivation land decreased sharply from 38.5% in 2014 to 24.6% in 2024, reflecting a trend of shrinking production types with low added value and inefficient land use. Conversely, the area dedicated to safe vegetables, fruit trees, and especially high-tech agriculture has increased significantly. The rapid increase in high-tech agricultural land, from 3.1% to 11.5%, shows that the orientation towards modern agricultural development in Cu Chi district is gradually being realized. However, this shift also poses challenges in planning, investment, and technical support to ensure efficient and sustainable land use in the long term.

Table 2. Main crop and livestock structure in Cu Chi District

Production team	Percentage (%)
Paddy	22.4
Safe vegetables	26.7
Fruit trees	18.9
Pig and dairy farming	21.3
High-tech agriculture	10.7

Source: Compilation of survey results and secondary data

The data in Table 2 clearly reflects the characteristics and development orientation of agricultural production in the northwestern communes of Ho Chi Minh City. Production groups such as safe vegetables, fruit trees, and livestock farming account for a large proportion, showing that local agriculture is gradually shifting from the goal of ensuring output to the goal of increasing economic value and meeting the needs of the urban market. Dairy and pig farming play an important role in creating stable income for farming households, while high-tech agriculture, although still relatively small, is identified as a strategic development direction for the future. This structure reflects the adaptation of agriculture in the northwestern communes of Ho Chi Minh City to the requirements of urban agriculture and high-value agriculture development in Ho Chi Minh City. The crops grown here all play an important role in economic development and ensuring livelihoods in the area. Rice is a crop that contributes to ensuring food security, safe vegetables have export value and supply urban areas, and high-value fruit crops need to be developed. The region is also investing in the development of high-tech agricultural products, which is a suitable development direction for the coming years.

Table 3. Characteristics of the farmer household survey sample (n = 300)

Criteria	Classify	Percentage (%)
Land area	< 0.5 ha	41.3
	0.5 - 1 ha	37.8
	> 1 hectare	20.9
Production method	Individual	63.5
	Join the cooperative	36.5
Application of technology	Short	44.2
	Medium	38.6
	High	17.2

Source: Results of the author's survey.

Table 3 presents the basic characteristics of the survey sample of 300 farming households in the northwestern communes of Ho Chi Minh City. The results show that the majority of households have small to medium-sized production land, with the group of households with an area of less than 1 hectare accounting for nearly 80% of the total sample. This clearly reflects the fragmentation of agricultural production in the locality, making mechanization and the application of large-scale production models difficult. In addition, the percentage of households participating in cooperatives is still quite low, indicating that production linkages have not yet become a widespread trend. The level of technology application in production is also not high, with only 17.2% of households rated as high, highlighting the urgent need for support policies and training to promote the transition to modern agriculture.

Table 4. Farmers' perceptions of high-tech agriculture

Review content	Agree (%)
CNC helps increase productivity.	78.6
CNC helps stabilize the output.	52.4
CNC requires significant capital investment.	81.9
CNC needs government support.	74.1

Source: Results of the author's survey.

The results in Table 4 show that farmers in the northwestern communes of Ho Chi Minh City have a relatively positive perception of high-tech agriculture. The majority of respondents believe that applying high technology helps increase productivity and improve production efficiency. However, the percentage agreeing that high-tech agriculture helps stabilize output is only average, reflecting a lack of confidence among farmers in the product market. Notably, the majority of households believe that high-tech agriculture requires significant investment and government support. This highlights the gap between awareness and practical implementation capabilities, and emphasizes the crucial role of support policies in promoting the development of high-tech agriculture in the locality.

Table 5. Main difficulties in agricultural economic development

Disadvantaged group	Percentage of households affected (%)
Lack of investment capital	69.3
Unstable output	61.7
Lack of production linkages	58.4
Lack of market information	46.9
Pressure to convert land	42.1

Source: Results of the author's survey.

Table 5 summarizes the main difficulties faced by farmers in the northwestern communes of Ho Chi Minh City in developing their agricultural economy. Lack of investment capital and unstable output are the two most prominent difficulties, reflecting limitations in farmers' access to resources and markets. In addition, the lack of production linkages and market information increases risks in agricultural production. The pressure to change land use due to urbanization further complicates the maintenance of agricultural production. These results indicate that the development of the agricultural economy in the northwestern communes of Ho Chi Minh City requires support from comprehensive and long-term policies.

Table 6. Comprehensive assessment of agricultural economic development in Cu Chi district

Criteria	Evaluate
Structural transformation	81,3%
Economic efficiency	62,7%
Value chain linkage	39,9%
CNC applications	50,6%
Sustainability	44,3%

Source: Results of the author's survey.

Table 6 provides an overview of the agricultural economic development situation in Cu Chi District. Although the agricultural restructuring process is considered positive, economic efficiency and the level of value chain linkage remain at a medium to low level. The application of high technology is not uniform among household groups and areas, leading to low sustainability of the agricultural economy. This comprehensive assessment serves as an important basis for further analysis in the discussion section and for proposing appropriate policy implications.

3.3. Assessment of agricultural economic development in the northwestern communes of Ho Chi Minh City

Overall, the agricultural economy of the northwestern communes of Ho Chi Minh City has achieved certain successes in the process of structural transformation and technology application. Agriculture not only contributes to local economic growth but also plays an important role in ensuring the supply of agricultural products for Ho Chi Minh City. However, limitations such as fragmented production, weak linkages, the impact of urbanization on agricultural land, and environmental pressure remain major challenges. The main reasons stem from limitations in capital, the management skills of farming households, and the lack of uniformity in policies supporting agricultural development. The research results show that the trend of shifting the agricultural economic structure in the northwestern communes of Ho Chi Minh City is consistent with the findings in international studies on suburban and urban agriculture (OECD, 2021; FAO, 2023). The gradual reduction in the area of traditional food crops and the increase in high-value agricultural models reflect the adaptation of local agriculture to urbanization and market pressures. Compared to studies by the World Bank (2020), the results in the northwestern communes of Ho Chi Minh City show that value chain linkages remain a major weakness of the local agricultural economy. Although farmers' awareness of high-tech agriculture has improved, the lack of effective production organization forms limits market access and value-added enhancement.

4. CONCLUSION

The findings indicate that agricultural economic development in inland communities under urbanization is a multidimensional process shaped by land-use transformation, development policies, market conditions, technological capacity, and local socio-economic characteristics. In the case of the northwestern communes of Ho Chi Minh City, the period 2014–2024 witnessed a clear shift in agricultural production from traditional, low-value activities toward more modern, market-oriented, and sustainable models, including high-tech agriculture, ecological agriculture, safe vegetable production, fruit cultivation, and concentrated livestock farming. This transformation reflects the adaptability of local agriculture to the pressures and opportunities created by urbanization. However, the study also shows that agricultural economic development in these inland communities still faces several persistent constraints. Agricultural production remains fragmented and largely household-based, while farmers' access to capital, technology, market information, and stable output channels is still limited. Value chain linkages and cooperative-based production have not yet developed strongly enough to support large-scale, efficient, and sustainable agricultural models. In addition, the pressure of land conversion caused by urban expansion continues to create uncertainty for agricultural planning and long-term investment. Based on these findings, several policy implications can be proposed. First, agricultural development planning should be closely integrated with urban planning in order to protect suitable agricultural land and create stable conditions for efficient production models. Second, local authorities should strengthen support mechanisms that help farmers access credit, science and technology, technical training, and market information, particularly in high-tech and ecological agriculture. Third, cooperatives and value chain linkages should be promoted as key instruments for overcoming fragmented production, reducing market risks, improving product quality, and increasing farmers' income. Finally, agricultural economic development in inland communities should be placed within the broader framework of sustainable urban development. Policies should not focus only on production growth, but also on environmental protection, climate change adaptation, livelihood security, and the preservation of agricultural space in rapidly urbanizing areas. For Ho Chi Minh City, the northwestern communes can become an important model of adaptive, efficient, and sustainable urban agriculture if planning, investment, technology, and farmer participation are coordinated in a more practical and long-term manner.

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