

Quality Evaluation and Spatiotemporal Characteristics Analysis of Agricultural Development in Zhejiang Province

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Abstract. This paper establishes a comprehensive and scientifically rigorous evaluation index system specifically designed for high-quality agricultural development. Utilizing methods such as the entropy weight method, comprehensive evaluation index method, and Dagum Gini coefficient, it provides an in-depth analysis of the level and spatiotemporal dynamics of agricultural development in Zhejiang Province. The results indicate that Zhejiang Province has consistently demonstrated an improvement in the overall quality of its agricultural development, evident from a substantial increase in the agricultural development index, particularly after 2018. This upward trend is primarily driven by significant advancements in agricultural production efficiency, coupled with the rapid integration and expansion of mechanization and technology. Additionally, the study highlights notable regional disparities and burgeoning trends in agricultural development within Zhejiang. Specifically, the northern region maintains its leading position, while the eastern region is progressively gaining prominence. To facilitate comprehensive and high-quality agricultural development across Zhejiang Province, the paper suggests strategies including fostering coordinated regional development, optimizing resource allocation, and refining the structure of the agricultural industry.

AMS subject classifications: 94A17, 68M20

Key words: Zhejiang Provinces, Agricultural development, Spatiotemporal characteristics, Regional differences.

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1 Introduction

The report of the 20th National Congress of the Communist Party of China underscores high-quality development as the foremost objective in building a modern socialist country. With China's rapid economic expansion, people's purchasing power and consumption patterns are continuously evolving, necessitating a heightened standard for agricultural development and product supply. Agriculture, as the cornerstone of the national economy, plays an increasingly pivotal role in achieving high-quality development in this new phase of development. Nevertheless, disparities in natural, economic, social, and technological conditions lead to uneven levels of agricultural development across regions and time periods in China. The 2024 government work report emphasizes the pressing need to enhance regional coordinated development, with Zhejiang Province facing particularly heightened expectations for its agricultural high-quality development. Characterized by uneven regional development, Zhejiang Province comprises 11 cities and several key urban agglomerations, occupying a strategic position. The 11 prefecture-level cities are: Hangzhou (HZ), Ningbo (NB), Wenzhou (WZ), Zhoushan (ZS), Taizhou (TZ), Lishui (LS), Jinhua (JH), Quzhou (QZ), Huzhou (HuZ), Jiaxing (JX) and Shaoxing (SX). In the context of the economic new normal, examining the level of high-quality agricultural development in Zhejiang, its temporal and spatial variations, and exploring feasible solutions hold immense theoretical and practical significance. This analysis not only aids Zhejiang's agricultural high-quality development but also serves as a valuable reference for other regions.

Currently, the approaches to establishing an evaluation index system for high-quality agricultural development mainly encompass three aspects. Firstly, based on economic growth theory, the level of development is assessed through total factor productivity and agricultural green total factor productivity. Secondly, in line with the new development paradigm, a multidimensional evaluation system incorporating macroeconomic growth indicators is constructed for comprehensive analysis. Thirdly, combining the essence and attributes of high-quality agricultural development, a system encompassing indicators such as product quality, economic benefits, scientific and technological innovation, industrial structure, green development, and social benefits is established.

On this basis, scholars have skillfully employed various analytical tools such as the PROMETHEE method, cluster analysis, and principal component analysis, while closely integrating advanced techniques such as spatial statistics and standard deviation ellipse analysis, to conduct in-depth exploration and research on the spatial evolution trajectory and regional influencing factors of high-quality agricultural development. It is particularly noteworthy that Zhejiang Province still holds tremendous potential for improvement in agricultural development and resource utilization, which warrants further exploration and exploitation.

This paper focuses on Zhejiang Province as the research subject, drawing upon the research conducted by Liu et al. [1] and Xin & An [2], to establish a systematic and scientifically rigorous evaluation index system tailored for high-quality agricultural develop-