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HOW GREEN AGRICULTURAL ECONOMY EFFICIENCY VARIES IN CHINA: CONSIDERING AGRICULTURAL GRAY WATER FOOTPRINT

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Abstract

Agriculture is a cornerstone of China's economy, yet environmental concerns necessitate a shift toward green agricultural practices. This study evaluates the economic efficiency of green agriculture across 31 Chinese provinces from 2008 to 2019. By integrating the entropy weight method, analytic hierarchy process, and D-S evidence theory, we construct a comprehensive evaluation framework. The SBM-DEA model is applied to measure green agricultural economic efficiency, while the Malmquist index decomposes total factor productivity to assess efficiency changes. Additionally, the Tobit model identifies key influencing factors. The findings reveal that green agricultural economic efficiency has improved nationwide, with eastern regions performing significantly better. However, technological progress remains a primary constraint on productivity growth. Moreover, factors influencing efficiency vary across regions and time periods. This research offers insights into policy-making for sustainable agricultural development, emphasizing the need for technical progress advancements and region-specific strategies.

Key words: economic efficiency, gray water footprint, green agriculture, Malmquist index model, SBM-DEA model

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