

# **Impact of Agricultural Mechanization on Household Dietary Diversity and Food Consumption: Insights from Rice Farmers**

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## **Abstract**

Nutrition security and food security are critical global issues and a key focus of the United Nations Sustainable Development Goals (SDGs), which underscore the right of all individuals to have sustainable access to sufficient, safe, and nutritious food that meets their daily dietary needs and personal preferences, supporting a healthy and active life. The existing literature on mechanisation adoption has primarily focused on its impacts on farm performance, technology adoption, non-agricultural employment, and women's empowerment. However, limited attention has been given to the specific effects of technological progress in agricultural practices on the nutritional security of smallholder households. Therefore, the primary objective of this study is to explore the impact of mechanisation adoption on household dietary diversity and food consumption. We use the household dietary diversity score (HDDS), per capita food expenditure, and the food consumption score as measures of household dietary consumption levels, and estimate survey data from 1,577 rice-growing households from three provinces (Hubei, Jiangsu, and Yunnan) of China. This study employs the inverse probability weighted regression adjustment estimator to address the issue of covariate imbalance. The results indicate that farmers' decisions to adopt mechanisation are influenced by age, health status, farm size, number of plots, negative shocks, household size, input markets, and village terrain. We also found that households adopting mechanisation exhibit significant differences in HDDS, per capita food expenditure, and food consumption score compared to those without adopting mechanisation. Adopting mechanisation improves household HDDs, per capita food expenditure, and food consumption indices by over 6%. The impact of agricultural mechanisation on nutritional security exhibits heterogeneity across production stages and cropping patterns. Our findings underscore the crucial role of promoting agricultural mechanisation in enhancing household nutrition, food security, and well-being.

**Keywords:** Agricultural mechanization; HDDs; Food consumption; Inverse propensity weighted regression; Rice-farmers; China