

Comparative Economics of Community-Managed Natural Farming vs. Conventional Farming in Rice – An Exploratory Study in Andhra Pradesh, India

Abstract

The growing environmental and socioeconomic challenges of modern agriculture have intensified the search for sustainable farming alternatives that ensure productivity, equity, and ecological balance. In India, where small and marginal farmers dominate the agricultural sector, Natural Farming (NF) has emerged as a viable, low-cost alternative to Conventional Farming (CF). Despite its policy relevance, empirical evidence on its comparative economic viability, determinants of adoption, technical efficiency, and consumer acceptance remains limited. This thesis addresses these gaps through four objectives: (i) to analyze the economic viability of NF rice compared to CF rice; (ii) to investigate the determinants of adoption and non-adoption of NF; (iii) to analyze technical efficiency and factors influencing it under NF and CF systems; and (iv) to identify consumer preferences and attitudes toward NF foods. The study is based on primary data from 500 CF and 500 NF rice farmers, as well as 183 consumers across selected districts of Andhra Pradesh, supplemented with secondary sources. Analytical tools, including cost–return analysis, Principal Component Analysis (PCA), Garrett ranking, and Stochastic Frontier Analysis (SFA), were used to assess performance and efficiency. Regression models identified determinants influencing adoption and efficiency, while consumer preferences were analyzed using quantitative and qualitative methods. Findings reveal that NF farmers incurred substantially lower input costs, particularly for fertilizers and pesticides, resulting in higher benefit–cost ratios than CF farmers, despite marginal yield differences. Mean technical efficiency was slightly higher for NF (86.5%) than for CF (85.1%), with training, livestock ownership, and extension services significantly improving efficiency. Gender analysis highlighted NF as a women-inclusive farming system, with women actively engaged in input preparation, soil health management, and decision-making. Institutional and peer networks strongly influenced NF adoption. On the demand side, awareness and preference for NF produce were increasing, especially among educated, health-conscious urban women. Overall, NF proved economically viable, technically efficient, and environmentally sustainable, offering policy directions for scaling up through local certification, livestock-based credit, decentralized input centers, women-led farmer producer organizations, and stronger institutional support.

Keywords: Natural farming; Conventional farming; Technical efficiency; Consumer perception; Andhra Pradesh