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Renewable Energy and Sustainable Agriculture: Review of Indicators

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Abstract

Sustainable agriculture strives to ensure future food and energy supply while safeguarding natural resources. The interpretation of sustainability varies by context and country, yielding distinct indicators. Researchers have studied sustainable agriculture for the past 25 years and have developed several indicators. Renewable energy holds a vital role in sustainable agriculture, aiding energy needs and mitigating environmental harm tied to agriculture. It curbs fossil fuel dependency and harnesses agricultural waste for energy. However, a consistent update of renewable energy indicators for agricultural sustainability is needed. Employing SALSA (Search, Appraisal, Synthesis, and Analysis) and PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodologies within the PRISMA protocol, this study extracts 84 indicators from 420 papers via SCOPUS. These indicators span social, environmental, economic, institutional, and technical dimensions. The study refines these indicators based on significance and influence, offering an enriched perspective. Furthermore, the analysis categorizes papers by publication year, continent, and topic, providing insights for stakeholders, policymakers, and researchers. By ensuring periodic indicator updates, this research promotes sustainable agriculture, informs priority areas, and guides strategic decisions. This contributes to global resilience and food security aspirations in a changing world. The future of renewable energy and sustainable agriculture will involve cutting-edge technologies, refined policy frameworks, and inclusive cross-sector collaboration to address pressing global challenges and create a greener, more resilient world.

Keywords: sustainable agriculture, renewable energy, agricultural sustainability indicators, agricultural wast

Full text

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