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BOOK REVIEW

Multifunctionality of Rice Production Systems in Asia: A Synoptic Review, V. Ratna Reddy and Dil B. Rahut, Asian Development Bank Institute, Tokyo, Japan, 2023. Pp.xix+101.

Rice is not only a major crop and staple food in Asia but also a critical source of feed, fuel, and livelihood for millions of people. It is deeply woven into the socioeconomic fabric and cultural identity of many Asian countries. The rice production systems account for a substantial proportion of land and water resources use in Asia. The rice production systems are also associated with diverse ecosystem services compared to other farming systems. Despite the wide array of essential services provided by rice production systems, their roles are often viewed too narrowly, primarily emphasizing food production alone. This limited perspective overlooks the multitude of benefits that rice production offers to society. For instance, rice cultivation is crucial in maintaining ecological balance by supporting biodiversity, enhancing soil fertility, and providing habitats for various species. Ignoring these roles can lead to urban-biased policies (as argued by Michel Lipton) and unfavourable trade terms, ultimately weakening agricultural viability. In this context, the book under review provides an in-depth look at the multifaceted roles of rice production in Asia's agricultural systems.

The book thoroughly examines both commodity and non-commodity outputs of rice production, classifying non-commodity outputs as ecosystem services or environmental externalities, which can be positive or negative. It assesses various rice systems—lowland, upland, floating, saltwater/backwater, rice-fish systems, and more—with unique outputs and externalities. This review combines extensive literature, empirical data, case studies, and theoretical frameworks to provide a holistic understanding of rice's multifunctionality, making it perhaps the first of its kind in Asia.

This book is organized into five chapters. Chapter 1 introduces the background for the study and outlines the approach used in the review process. Chapter 2 explores the historical, sociocultural, and economic significance of rice production systems across various Asian countries, highlighting key trends and challenges. Chapter 3 examines the multifunctional roles of rice across the region, detailing both commodity and non-commodity outputs and their associated externalities. Chapter 4 discusses the methodologies and valuation techniques used to internalise externalities and evaluate positive and negative environmental impacts. It includes direct and indirect valuation methods for non-market goods and services. Chapter 5, the final section, identifies existing research gaps and outlines the next steps for future study. This review follows a systematic approach and provides a concise overview of the methodologies commonly used to assess the non-commodity outputs and environmental externalities associated with rice production.

The authors illustrate rice's diverse functions beyond food, such as supporting biodiversity, acting as a carbon sink, providing livelihoods, and stabilizing rural communities. By covering irrigated monoculture, rice-fish systems, and the system of rice intensification, the review highlights the importance of non-commodity outputs, many of which exceed commodity outputs in their contributions to the Sustainable Development Goals. The book underscores rice-growing communities' crucial roles in national and global green economies and advocates for increased support to sustain their environmental contributions.

The book also examines the current status and critical role of rice production across Asia and its economic and social contribution. The authors emphasize rice's centrality to food security, economic stability, and cultural identity in Asia. In addition to assessing the status and importance of rice production in Asia, they discuss rice systems; contributions to social, economic, and ecological sustainability. The authors present case studies that illustrate rice's ceremonial and cultural significance, reinforcing the importance of understanding rice beyond its caloric value. They underscore that while rice is a staple food for billions, its importance extends beyond caloric intake, influencing social structures, cultural practices, and environmental sustainability. The book presents case studies that reveal how traditional rice cultivation methods align with ecological preservation, providing lessons in resilience and sustainability.

One of the main strengths of the book is that it examines both the specific and general challenges facing rice production systems in Asia. Specific challenges include monocropping, biodiversity loss, resource constraints like water scarcity, and the impacts of climate change. Issues such as low water-use efficiency in wetland rice production, poor irrigation management, and increasing climate-related uncertainties exacerbate these challenges. On a broader level, the agricultural sector across most Asian countries is in crisis, with declining profitability prompting more farmers to exit the industry. Global climate change further intensifies these issues, impacting agriculture through altered precipitation patterns and changes in the intensity and distribution of rainfall. Delayed monsoons and more frequent droughts force farmers to adjust cropping patterns, adding another layer of complexity to rice farming. This review provides a realistic view of the pressures on rice systems, such as shifting climate patterns that disrupt planting cycles, urbanization reducing arable land, and economic transitions leading to labour shortages in agriculture.

The book adeptly examines the environmental benefits and costs of rice production. While rice fields contribute to flood control, soil fertility, and biodiversity, they pose challenges like methane emissions and inefficiency in water use. The authors propose sustainable intensification methods, such as improved water management, climate-resilient rice varieties, and integrating modern technology with traditional practices to balance the trade-offs.

Another strength of the book is its interdisciplinary approach, combining insights from agricultural science, economics, sociology, and environmental studies.

This multi-dimensional perspective underscores the need to consider interconnected factors in understanding rice production's role in Asia, making it particularly valuable for researchers, policymakers, and practitioners seeking a comprehensive view.

While the book is informative and insightful, a few areas could be expanded. Although traditional practices are extensively covered, there is limited discussion on modern irrigation and water management approaches and technologies that could enhance productivity. The book uses the Contingent Valuation Method (CVM), a stated preference approach based on hypothetical market scenarios, to value non-market goods and services. As economic valuation is a very context-specific issue, using CVM has raised the question of the practical applicability of the valuation exercise. Using revealed preference methods could offer more practical insights into non-commodity valuation.

This well-structured and insightful book is essential for those interested in agricultural sustainability, rural development, and food security in Asia. It offers an academic yet practical perspective, advocating for policies that support rice production's multifaceted roles. The book highlights the need to recognize rice's contributions beyond food and offers valuable recommendations for sustainable practices to balance economic, environmental, and cultural demands. Highly recommended for researchers, policymakers, and practitioners, it is an indispensable guide to understanding rice production's broader implications in Asia.

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