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## Book reviews

*Climate Smart Agriculture: Building Resilience to Climate Change*, edited by L. Lipper, N. McCarty, D. Zilberman, S. Asfaw and G. Branca. Published by Springer International, 2018, pp. 630, ISBN: 978-3-319-61193-8, Open Access under a CC BY-NC-SA 3.0 IGO license from [springer.com](http://springer.com).

This book contains 25 chapters on the potentials of climate-smart agriculture (CSA) as an approach to adapt to climate change globally, especially in developing countries heavily dependent on rain-fed agriculture. CSA is a broad concept encompassing efforts to build climate resilience and adaptive capacity to improve agricultural growth for food security. This book provides the conceptual, empirical and policy basis for CSA.

The book is divided into three sections. The first section is an overview of the CSA concept and how it relates to economic principles. It is clarified how the concepts of resilience, adaptive capacity, technology adoption, innovation and institutions relate to each other and the economics of CSA. Lipper and Zilberman discuss how the concept of CSA has been reshaped by actors involved in developing and implementing it. The authors discuss controversies related to CSA, for example, its relationship with sustainable agriculture, the role of agricultural mitigation and carbon financing in developing countries. It is argued that CSA is an approach to manage climate change under heterogeneous socio-economic and agro-ecological conditions. It is neither a prescription of technologies nor a perspective to resolve the controversies. In the next chapter, McCarthy *et al.* beautifully articulate the lack of coherence in the CSA approach. They propose a formal economic concept based on a dynamic optimization problem wherein a social planner seeks to maximize expected discounted welfare from agriculture, both now and in the future. The last chapter in this section, by Zilberman *et al.*, frames agricultural innovation as an effective adaptation and mitigation to climate change.

The second, and the largest, section provides empirical evidence on CSA regarding vulnerability assessment and how this can be used to build adaptive capacity at policy, system and farm levels. Chapters 5–9 provide state-of-the-art contemporary tools such as near real-time satellite observations, advanced econometric models, crop statistical models and fine-tuned simulation-based integrative decision support methods. These methods are shown with case studies from Africa, Asia and the US. Specifically, it is argued that capacity limitations to apply sophisticated tools could be a foreseeable challenge but can be overcome through targeted human capital development. The subsequent empirical chapters (Chapters 10–23) illustrate adaptive capacity through a range of policy instruments. These include social protection, microfinance, microinsurance, input subsidies and agricultural knowledge, and

climate information. The adaptive capacity is excellently illustrated at policy, system and farm levels.

At the policy level, Carter *et al.* (Chapter 10) argue that index insurance is not an easy solution to the problem of climate risk in East Africa unless technical and institutional innovations, especially in the design of the contract are improved. In Chapter 11, Asfaw and Davis show the positive role of cash transfer programs in managing climate risk and ensuring food security in sub-Saharan Africa. Jayne *et al.* also show the potentials of input subsidy programs for CSA in Africa, especially if they can be linked with innovations such as open voucher programs that can attract greater participation of private sector in input distribution systems (e.g. heat-drought-saline-tolerant seed types). Moreover, the authors note a portfolio of multiple technologies rather than a limited set of inputs would promote greater adaptive capacity and resilience. Indeed, it is known that trade-offs and complementarities between inputs (seed or inorganic fertilizer) and natural resource management technologies could lead to positive synergies for smallholder farmers in Africa (Wainaina *et al.* 2016). The book could have shown more examples of compatibility between input-intensive and improved agronomic strategies for resource-poor farmers.

At the systems level, Mereu *et al.* (Chapter 13) use historical climate record to demonstrate how ‘no regret’ policies can be formulated that minimize the risk of imprecise long-term investments in response to multiple climate outcomes and flexible production systems in Nigeria. Antle *et al.* then introduce a simulation-based impact assessment tool to evaluate the potentials of current agricultural systems to achieve the goals of CSA.

Chapter 15 addresses supply chain issues, with Reardon and Zilberman emphasizing that understanding agri-food supply chains as interdependent set of segments can guide climate-smart food supply chains in developing countries. They argue that climate shocks upstream in the supply chain can disrupt midstream and downstream segments (activities), and yet this is not reflected in practice. Mullins *et al.* apply simulation model under different climate scenarios to evaluate the effectiveness of agricultural extension and rain-indexed insurance in driving adaptation and welfare outcomes. Thornton *et al.* use systematic reviews to assess trade-offs and synergies among CSA techniques, potentials of their adaptability and identify knowledge gaps in mixed crop-livestock systems. However, a quantitative analysis of tangible distributional impacts could have improved pragmatic CSA targeting. Finally, Chapter 18 by Cacho *et al.* introduce a spatiotemporal policy simulation model to assess households’ vulnerability and adaptive capacity in Zambia.

Chapters 19–23 present examples of the economic benefits of adopting CSA technologies at the farm level in Africa and Asia. For example, Nkonya *et al.* illustrate how sustainable land and water management, such as organic soil fertility, inorganic fertilizer and water management can offset climate risk in Nigeria and Mali, while Mirzabaev reports positive impacts of climate-smart agricultural technologies in central Asia. The general conclusion from

these chapters is that good access to markets, extension services, local climate information and carbon market are required to incentivize adoption.

The third section of the book (Chapter 24) examines policy issues based on views of a panel of leading experts in the field. Here, revisiting agricultural extension, integrating climate information into multisectoral planning and sound targeting of policy instruments such as index insurance, cash transfers and subsidies are emphasized. In particular, the promotion of conservation agriculture, small-scale irrigation and diversification are underlined. For example, the best strategy to promote conservation agriculture is through value chain development which incorporates both positive and negative externalities. As Sanchez argued, targeted subsidies are critical for sub-Saharan Africa where the use of inorganic fertilizers is meagre (<12 kg/ha), formal markets and credits are thin. His view to compensate agriculture for the added positive externalities like soil carbon, improved ecosystem services and increased food security could lead to widespread adoption of CSA strategies in Africa.

While both adaptation and mitigation are crucial for climate change, this book paid little attention to mitigation. Nonetheless, the book brings together research, analysts and opinions of leading experts to develop the conceptual, empirical evidence and policy basis for CSA. This aspect of knowledge integration would be one of the core values added as no other book does this in one place. The book concludes that CSA is an evolving concept that needs refining and adapting to realities of climate change for achieving sustainable development. I highly recommend the book to anyone interested in this field of study.

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### Reference

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*Lucky Boy in the Lucky Country: The Autobiography of Max Corden, Economist*, edited by Werner Max Corden. Published by Palgrave Macmillan, 2017, 243 pages, ISBN: 978-331965165-1, AU\$ 149.00

In his foreword to this book, Martin Wolf describes the author as ‘Australia’s greatest living economist’, and indeed, a case can be made for describing Max Corden as Australia’s greatest ever economist. A department at the ANU and