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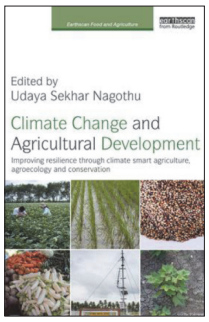

Climate change and agricultural development: improving resilience through climate-smart agriculture, agroecology and conservation

Udaya Sekhar Nagothu (ed), 2016

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The book presents some of the most progressive and up-to-date thinking on climate-smart agriculture (CSA). The authors set the scene by highlighting how CSA is not entirely a new concept, drawing parallels with many of the associated practices and technologies that are already familiar to farmers. They argue that CSA is however a different approach, combining a suite of sustainable practices, technologies, and institutional frameworks, with the aim of maximising productivity, adaptation and mitigation potential. The book outlines the main parameters through which climate change is affecting agriculture – trends in rainfall and temperature, extreme events such as multi-year droughts, flooding, late frosts, severe storms and heat waves, and changes in the incidences of pests and diseases. They also allude to socio-economic factors such as demographic shifts, changes in consumer demand, and commodity prices as drivers of changes in the context within which food production is taking place. Importantly, the authors note that understanding the impacts of climate change includes identifying who and what is at risk, the assessment of capacity to adapt, and the equity and justice of the distribution of impacts.

Another important point of departure for this book is the realisation that much of the growth in productivity and mitigation potential will come from developing countries. The authors describe an 'adaptation-deficit' where many societies are not even adapted to existing climatic conditions and variability, suggesting that this should be the starting point before even worrying about future climate change. They rightly note that, it is far less expensive to increase yields in low productivity systems where yields are one quarter or less of potential, compared to well-developed systems where only marginal improvements are possible. As such smallholder systems in developing countries need to be the focus of scarce development resources.

Three categories of adaptation to climate variability and change are presented in the book. Although adaptation is typically viewed as either incremental or transformational, the authors include resilience-building as a third category. This categorisation suggests that, although adaptation and resilience are commonly used interchangeably, not all adaptation measures build resilience. The authors rightly highlight that the frontline of adaptation to climate change will be through improved agronomic practices. These agronomic measures are related to integrated soil management, crop varieties, crop mixtures and rotations, among others. The principle of managing current climate variability as the best indicator of the ability to manage future variability is perhaps something that most adaptation programmes should be founded on. Many of the technologies to do that already exist. No-regret interventions that address current climate risk, while building resilience, regardless of how future climate trends turn out is equally a key principle that should underpin adaptation programme design.

The CSA perspective presented in this book acknowledges agriculture's contribution to global GHG emissions as well as its vulnerability to climate. The unique position of the sector to solve the problem on both fronts by reducing GHG emissions and also increasing resilience to climate shocks is brought to the fore. A number of the chapters showcase CSA practices, technologies and perspectives that illustrate this dual potential, illustrating that increased productivity, improved resilience and emissions reduction are connected, and can be achieved jointly. Although there are trade-offs between some multiple objectives, it is clear that there are also many examples of complementarities that present opportunities for pursuing win-win solutions.

The authors characterise CSA as more efficient use of key resources such as water. They demonstrate different approaches to improved water management (water-smart agriculture) that can reduce some of the impacts of climate change, and in some cases, generate significant mitigation benefits. Improved water management, particularly water-smart irrigation, is at the centre of development, food security, and poverty reduction for water scarce regions such as South East Asia. Climate change will worsen these shortages and further complicate crop production and other forms of agriculture, hence the need to help farmers improve water management and productivity. Managing rainfall more efficiently in rain-fed systems in a way that improves yields, without disproportionately increasing emissions, is also presented as one of the key objectives. These measures will also improve resilience of rain-fed production systems.

The book grapples with the complex issues of gender, which clearly continue to bewilder the development community, including those focusing on CSA. Understanding the nature and underlying causes of the gender gap remains one of the most challenging and contentious fields of development. It is clear that the socio-cultural dynamics that underpin gender disparities are unique to specific contexts, and as such, solutions to overcome these will have to be informed by such specificities. Just as there is no single characterisation of the gender gap, no one solution will work everywhere.

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