Environmental Impacts of Pasture-based Farming


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Aldo Leopold, one of the 20th century’s greatest ecologists, noted that despite humanity’s technological advances, our tools “do not suffice for the oldest task in human history: To live on a piece of land without spoiling it” (Leopold, 1991, p. 254). Given the increasing demands for the finite resources of our small orb, this challenge can only increase. Projections for human population expansion, coupled with our species’ growing desire for animal proteins, means that agricultural intensification is likely to increase significantly in coming decades. This growing demand for global resources occurs coincident with (and indeed feeds) the mounting concerns over the effect of human activities on the environment. The challenge, then, is to find tools that allow us to manage resources in ways that maintain or enhance natural capital and also meet “the socio-economic expectations of land users and nations” (p. ix).

This condition is the backdrop to and basis for publishing Environmental Impacts of Pasture-based Farming. Editor R.W. McDowell (AgResearch, NZ) notes that the “principle objective of Environmental Impacts of Pasture-based Farming is to raise awareness among scientists and policymakers of the impact that grazed grasslands have on our environment” (p. xi). The book also aims to provide a broader understanding of the impacts of these systems for those who may have only a discipline-specific viewpoint.

Environmental Impacts of Pasture-based Farming contains 10 chapters and is divided into two sections. The first section is used to establish baseline information on pasture system impacts to the environment and is capped with a discussion of the interplay between policy and financial and environmental outcomes. The four chapters in Part I include “Greenhouse Gas Emissions,” “Impacts of Pastoral Grazing on Soil Quality,” “Land–Water Interactions: Impacts on the Aquatic Environment,” and “Socio-economic Issues in Pasture-based Farming.”


Environmental Impacts of Pasture-based Farming presents good reviews of the direct effects of pasture-based production systems on the environment. Greenhouse gas emissions, soil quality and nutrient losses (primarily C, N, and P), and impacts to water quality are covered in some depth. Given the various forms and transformations of nutrients such as C and N in the environment and their interactions in air, soil, and water systems, it is understandable that some repetitive presentation occurs by discussing these issues in separate chapters. The discussion of socio-economic factors in the adoption of environmental practices provides needed insights into the challenges in accounting for environmental impacts at the farm level, the environmental versus financial tradeoffs of change, and the policy and cultural issues that affect producer adoption.

Chapters on specific production systems provide needed context regarding the different types of pasture-based systems and the concomitant nutrient management issues faced by livestock producers and environmental managers. Chapters on nonirrigated, pasture-based dairying and hybrid dairy systems contain quite a bit of overlap in discussion and references, however. Whether an oversight in the synthesis process or the intent of the editor—perhaps to maintain some level of consistency among chapters—it adds to the feeling of redundancy of the book.

For those looking for a more global assessment of pasture-based farming systems, there will likely be some disappointment with Environmental Impacts of Pasture-based Farming. The book is presented almost singularly from the perspective of those living and working on pasture-based environmental and economic issues from temperate zones of the developed world.