

## Book review

### Carbon and Nutrient Dynamics in Natural and Agricultural Tropical Ecosystems

By L. BERGSTRÖM and H. KIRCHMANN (eds). Published by CAB International, Wallingford, UK, 1998. 336 pp. Price £49.95. ISBN 0 85199 218 8

This book celebrates ten years of the Soil Biology and Fertility Project at the University of Zimbabwe. There are 11 research papers from Zimbabwe, Malawi, Nigeria, Kenya and Uganda and 9 reviews from scientists on 5 continents.

The first segment of the book deals with various aspects of nutrient dynamics in soil. Probably readers of *Tropical Grasslands* will be most interested in the review by George Cadisch and others on the role of legumes in soil carbon accretion in savannah ecosystems. This tends to dissipate some of the euphoria occasioned by Myles Fisher's spectacular findings of carbon accretion at depth under grass-legume pastures in the llanos but it is heartening to discover that the low stock acceptance of many tropical legumes favours carbon and nitrogen accumulation in soils.

Decomposition of different crop residues and the variation in litter quality which can contribute to more synchrony between nutrient release and crop demand is treated next, whilst the third section describes some tree-soil-crop interactions. There is a gesture towards ecosystem dynamics before the final segment of 4 good reviews about future directions.

Ian Scoones focuses on the methodological dilemmas involved in understanding changes in

soil fertility, especially in relation to the application of scale. He suggests 'soil fertility is ... as much a product of economic, political and social relations impinging on a farming system, as it is of soil mineralization, deposition and erosion processes'. Similarly, D.J. Campbell hopes to 'model the intersection between societal and biophysical processes'; he was disappointed that the sociologists did not see the joke when he suggested the cation exchange might be in Chicago. He advocates emphasis on 'concepts of adaptation, diversity and flexibility in the face of uncertainty [which] foster an integration of indigenous and scientific knowledge systems'.

T. Roussen contrasts a suite of options for soil fertility management; a weakness of this book is the lack of critical interest in the cycling of nutrients through the grazing animal and in the potential of the planted pasture ley in cropping systems.

In the final review, M.J. Swift gives a synoptic account of the menu of approaches which lead to relevant and pragmatic solutions to the maintenance of soil fertility, which is at the heart of sustainable agriculture. This book is well edited and produced, has an index, is an invaluable source of reference and makes a useful contribution to the present state of knowledge about soil fertility in the tropics.

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