Journal of Agricultural Science, Cambridge (1998), **131**, 497–498. *Printed in the United Kingdom*

Book reviews

Temperate Forage Legumes, by J. FRAME, J. F. L. CHARLTON & A. S. LAIDLAW. viii + 327 pp. Wallingford: CAB International (1998). £27.50 or $50.00 (hardback).
ISBN 0 85199 214 5.

The book covers white clover (92 pp.), lucerne (73 pp.), red clover (44 pp.), subterranean clover (19 pp.), *Lotus* (27 pp.), alsike clover (6 pp.), sainfoin (11 pp.), serradella (8 pp.), sulla (5 pp.) and tagasaste (8 pp.). There is also an introductory chapter (13 pp.), a concluding chapter on prospects for forage legumes (5 pp.) and an index (9 pp.). The text is well supplied with supporting references, as in review articles. Some 1300 references, predominantly fairly recent, are cited.

For all the species covered, there is an introduction, something about the plant (with drawings) and something about its agronomy and management. For the species covered most fully, there is typically something on response to temperature, light, moisture and defoliation, and something on N fixation and transfer, mineral nutrition, breeding, cultivars and seed production, and the agronomy and management section is divided to cover topics such as establishment, fertilizer use, weed control, pests, diseases, herbage production, grazing, forage conservation, quality, antiquality and animal performance. The weight given to different topics and the order in which topics are covered varies from chapter to chapter.

The book will be a useful source of information and references for scientists and students carrying out research on any of the species covered. It will be useful also to farmers who grow any of the species and to their advisers and seed suppliers. It is a good book also for students or anyone else simply wishing to learn about temperate forage legumes and their use. Certainly all relevant libraries should have a copy.

On a more critical note, the standard of writing, checking, editing and proof reading could have been higher. Examples of mistakes or omissions are: 300 instead of 30 g N kg^{-1} DM on p. 70; units not given in Table 2.8; (b) (ii) omitted in Fig. 3.1; g instead of mg kg^{-1} Mo on p. 126; total herbage and leaves given the wrong thickness of line in the legend of Fig. 3.6; hay of 580 g DM kg^{-1} in Table 3.9. In some places I feel that there is too much reliance on earlier reviews and in some places too much reliance on conference papers rather than on fully-refereed journal papers. There is also sometimes a tendency to generalize too much from limited evidence. However, the book is the result of a large amount of work and is a valuable resource.

DAVID WILMAN

Improvement of Crop–Livestock Integration Systems in West Asia and North Africa, eds N. HADDAD, R. TUTWILER & E. THOMSON. xi + 572 pp. Aleppo, Syria: ICARDA (1997). No price quoted (hardback).
ISBN 92 9127 065 2.

This book contains 53 papers presented at a Regional Symposium on Integrated Crop–Livestock Systems in November 1995. It is a disappointing book, since in only eight papers is there an attempt to describe and evaluate the effectiveness of such systems. In another five papers, elements of integration are described but the inclusions are too small to make a sizeable impact.

Crop–livestock systems are very important internationally since they are used, with varying degrees of success, by millions of smallholder farmers in a variety of countries, many of which are struggling with agricultural developments against a background of an increasing population and falling export potential. As a result there is a great need for literature that gives a critical evaluation of crop–livestock systems in order to inform extension workers and farmers and to guide policy makers. The current text makes a small contribution to this need.

The book contains 17 papers on the improvement of barley, which is the main cereal in West Asia and North Africa and 15 papers on sheep breeding, nutrition and management, sheep being the most important livestock enterprise. Both of these areas have a large literature and most of the information concerns local husbandry and problems. A notable exception is a contribution which looks at guidelines for the management of the nutrition of sheep and asks the telling question 'what information do we have and what do we need?'

Other sections in this book are headed production technology and systems (three papers), forage legume improvement (four papers), rangeland and marginal land improvement (five papers), and technology adoption and impact (11 papers). In the first of these sections, one of the papers contains an outline of a whole farm model, which is a useful approach to looking at integration and the ways to make improvements. In the last section, two papers arouse considerable interest: one is concerned with the

importance of the development and transfer of technology and the three authors from Morocco pinpoint the constraints and describe an integrated approach. The other paper describes seasonal and daily labour allocation in Bedouin farming systems of Northern Syria and includes a large amount of quantitative data and gives appropriate emphasis to the role of women.

If the reader wishes to learn about farming in West Asia and North Africa, these proceedings are worth reading. Any additional interest in crop–livestock integration will leave a feeling of disappointment.

J. H. TOPPS

Chemistry of Variable Charge Soils, ed. T. R. Yu. xi + 505 pp. New York: Oxford University Press (1997). £60.00 (hardback).
ISBN 0 19 509745 9.

This book deals with the chemistry of tropical soils, or 'red earths'. In the preface to the book, the editor explains that it represents a synthesis of the work of The Department of Soil Electrochemistry at the Chinese Academy of Sciences who, 30 years ago, chose red earths as their major research area. As such, one would expect to find many new ideas, and new data, on this important and interesting topic.

Charged surfaces within the soil play a major role in determining its ability to retain nutrients and in its response to many types of pollution. In contrast to temperate soils, where, typically, the permanent charge derived from isomorphous substitution in 2:1 clay minerals dominates the soils' electrochemistry, the properties of many tropical soils are largely determined by the charge developed upon iron and aluminium oxides. This changes in response to both pH and salt concentration; hence, 'variable charge soils'. Many of the important properties of tropical soils arise, therefore, from the physical chemistry of charged surfaces, which this book sets out to explain.

The book deals thoroughly with the fundamental principles of soil electrochemistry. It contains chapters dealing with the formation of surface charge, electrostatic adsorption of cations and anions, specific adsorption of cations and anions, oxidation–reduction reactions, acidity and lime potential, amongst others. What is rather disappointing about it, however, is that this is the material that forms the backbone of almost any textbook on soil chemistry and that, in this book, the material is often not particularly clearly explained: students looking for a book on soil electrochemistry could find the same material described more clearly elsewhere. What separates the book from others that deal with these fundamental ideas is that all of the examples used to support the explanations are drawn from work on tropical soils. These represent what the editor refers to as '…previously unpublished data from our research'. However, in many cases, this 'real' data does not represent the best illustration of the idea that it is intended to exemplify. Neither is it presented in a form that would be particularly useful as a citable source. Apparently unreplicated data are shown on graphs with no error bars, nor any other statistical treatment. Thus, the book appears to serve neither the student nor the researcher particularly well.

Each chapter has a different author and the quality of style and expression is variable, sometimes irritatingly poor. The overall organization of the material could also be better. For example, in early chapters on surface charge and ion adsorption frequent reference is made to the 'electrical double layer' but it is not until the middle chapter of the book that this concept is explained.

The book contains much that is interesting and that could contribute to a wider understanding of the behaviour of this important group of soils. It is unfortunate that, because of the manner in which the material is presented, it is unlikely to find wide appeal.

STEWART MARSHALL