

Book review

Forage evaluation in ruminant nutrition

Edited by D.I. GIVENS, E. OWEN, H.M. OMED and R.F.E. AXFORD. Published by CAB International, May 2000. 469. 496 pp. Price £75 (US\$140). ISBN 0 85199 191 2.

This is an excellent book well worth purchasing and definitely worth having in a library. At a cost of US\$140, you need to buy this book to use not to gather dust on the shelf.

What is it about? It is a very comprehensive coverage of all things associated with feed evaluation. In an era when this discipline and corporate knowledge are being lost from organisations, I recommend it very highly for the libraries of those organisations. Younger scientists, who can only do a library search and do not know how or why various evaluation methods arose, can then read it and understand the limitations of data they receive in relation to digestibility etc. It is not just a history, although Chapters outlining the historical aspects of a particular methodology are most interesting. It provides an in-depth look at various methods and their advantages and disadvantages.

In all, there are 21 Chapters covering *in vitro* and *in vivo* procedures, simple methods *e.g.* nylon bag studies to very complex methodology *e.g.* nmr analysis of compounds. It covers all methods and maybe more than you need to know about forage evaluation. It has a theme running through from most authors in that the animal should be the ultimate testing agent, a refreshing idea. All authors examined their particular methodology or approach but there is a strong link to the animal. The second and more disturbing aspect was that a number of authors presented results of ring tests on various methods conducted in labs around the world. The variation was frightening.

I found Chapter 2 by Beever and Chapter 5 by Reynolds the most refreshing things I have read in a long time and they should be recommended for all students. It would also be invaluable for workers and extension people having to use or interpret nutritive value estimates to gain an insight into the accuracy of the methodology and why certain energy systems came into use. Beever examines feeding systems, tackles the accuracy of methodology for estimating nutritive value and makes a plea for more dynamic evaluation systems but most courageously tackles the issue of how accurate you have to be and what you need to measure to make sensible management decisions. He points out severe limitations in current systems but shows that, to make a sensible decision, you may not have to be as accurate as a chemist would like, simple analysis can be very misleading for predicting a

response. He also points a way to the future and gets you thinking. Reynolds takes you back to why energy systems were developed how methodology shaped the tables with which we work and provides a most lucid description of energy metabolism. He also provides a view of the future. The book is worth buying for these two Chapters alone.

All Chapters cover various methods and there is a degree of overlap. I did not find it annoying and, in some ways, aspects of different Chapters on the same topic gave a better feel for the variety of views in this area. Later Chapters on minerals, vitamins etc. were superficial to the extent that they covered a lot of issues in a short space. The more traditional nutritive value areas featuring essentially carbohydrate digestion were covered in the first 16 Chapters. The book gives excellent coverage of the principles of the methods. There are 3 Chapters on The Importance of Forage Evaluation for Humans and Animals, 7 on Estimating the Energy Value of Forages, 3 on Estimating the Protein Value of Forages, 3 on the Physiochemical Approaches, 4 on Minerals, Vitamins, Antinutritive and Other Factors and a final Chapter on General Conclusion and Discussion.

For those of us in the tropics, the book is disappointingly mostly directed towards temperate forages. This largely reflects the background of the authors. I am sure a Chapter by say Minson would have used many more tropical examples. If you work with tropical forages and want to use this as a text where material is collated, you will be disappointed. The examples are largely, but not exclusively, to do with temperate forages. However, this should not be a reason to reject the book. I regard it as one of the best collations of methods and rationale behind the methods that I have seen but a lot of the tropical literature is only briefly mentioned. One disappointing area here is phosphorus (P), where the vast work on P in Australia hardly rates a mention.

Institutions and workers in the area should have it on their shelves. At the price, you have to think about whether you are a serious worker in the area or not! It is an excellent text for students but many Chapters are more suited to specialist postgraduate students rather than general undergraduates. It is the sort of book where you would recommend that students read specific chapters rather than the whole book. The same advice would apply to readers of *Tropical Grasslands*.

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