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**BOOK REVIEW****Nitrogen Assimilation by Plants: Physiological, Biochemical and Molecular Aspects.**

Edited by Jean-François Morot-Gaudry. Enfield, NH: Science Publishers Inc.

2001. vi + 466pp. ISBN 1 57808 139 4. £83.00 (hardback).

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This book was originally published in French, by INRA (Paris), in 1997. New chapters have been added for the English version and the text of others has been updated (in 1999–2000). As I did not have access to the French edition, I was unable to check the extent of these changes, but certainly some of the material is not very up-to-date, with relatively few references post-1997.

Individual chapters in this book have been written by experts in the area, nearly all of them from France. There is a considerable bias towards agronomic crops, which, from the preface, is intentional. Much of the content is good and most is well presented, but the volume as a whole does not fill an obvious niche in the undergraduate market at which it is aimed, as there are several volumes covering similar material.

The chapters in the book are arranged in five parts, each with a short introduction. These parts are: assimilation of nitrate and ammonium; symbiotic assimilation of nitrogen (including ectomycorrhizal systems); synthesis and transport of amino acids and carbon/nitrogen relationships; distribution of nitrogen during plant growth and development; and nitrogen: ecophysiology and agronomy. The last does at least consider woody plants and is, together with the chapter on ectomycorrhizas, the most likely to be of interest to non-agronomists. The standard of English translation is generally high, and use of insets, for example illustrating how to bleed phloem, is helpful. The basic scientific topics of enzymology, molecular genetics (for example of nitrate uptake) and biophysics are some of the strongest in the book. There are some unfortunate errors; for example, in figure 2.1 the root cap is labelled 'root hair'. There is also some repetition, for example of the GS/GOGAT reactions.

Overall I found this book very frustrating. Five years ago it would have been good! The updating is very patchy; for example, the list of rhizobial genera (p. 135) could easily have been revised. One author contented herself with a section 'Addenda to the previous version' – my copy of the book had a duplicate of these addenda about 100 pages later! Obvious omissions for me are recent work showing that ammonium may be far more common in xylem than was once thought, without being toxic. Outside the section on ectomycorrhizas, the possible uptake by plants of organic N is not covered. Adaptations such as cluster roots, which may enable plants to access N in poor soils, are not considered. I realize that this is because the emphasis is on agricultural species, but in this time of climate change and overpopulation we would do well to consider how plants cope with adverse environments.

On balance, I think that readers of this Journal could spend £83 to better effect.

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