

Book Reviews

Oxford Surveys of Plant Molecular and Cell Biology Vol. 6

B.J. Miflin (ed.).

Oxford University Press/ISPMB, Oxford. 1989.

viii + 301 pp. Illustrated, paperback, £22.00.

ISBN 0-19-857735-4.

In this volume of the *Oxford Surveys of Plant Molecular and Cell Biology* a number of plant genes and proteins are discussed in thematic fashion. Apart from describing a number of case studies, the method of using antisense constructs to silence expression of particular genes is presented. The chapters on ubiquitin, thionines and glutamine synthase give a nice overview, not only of the proteins themselves and their function in the plant cells' metabolism, but also the structure and expression of their encoding genes is presented in extensive detail. These chapters are very useful both in giving an in-depth picture of the field, and also as an example of the necessity to combine physiological, biochemical and molecular data.

One drawback of the chapters dealing with photosystem II and HMW subunits is that they have been written in such a compact form, that rather than giving a review of current thinking in these areas they are more like an encyclopaedia.

Overall the book is good; chapter 7, which presents the possibilities of using antisense technology is highly recommended reading.

S. C. DE VRIES

Microspores. Evolution and Ontogeny

S. Blackmore and R.B. Knox (eds).

Academic Press, London. 1990. x + 347 pp.

Illustrated, hard cover, UK£49.50, US\$106.00.

ISBN 0-12-103458-5.

Until the publication of this book there was no single volume reviewing so many aspects of microsporogenesis in so many plant groups. In the light of the recent attempts to unravel the broad strands of plant phylogeny with cladistic techniques, microspore characters have become increasingly important. The wealth of features revealed by transmission electron microscopy, including data of extant as well as fossil plants, have already contributed much to our understanding of plant relationships. Strictly speaking, microspores are confined to heterosporous plants that also produce megaspores. However, the book includes various plant groups that produce a single type (isospores), so as to be able to compare the microspores with isospores, from which they are derived. The male ontogenetic programme, from (micro)spore mother

cell to (micro)spore (to pollen grain in seed plants), and the evolutionary context of its diversity are the major themes. One of the introductory chapters discusses the phylogenetic framework of the supposedly monophyletic group chlorobionts, which contains the grade (paraphyletic) green algae and the clade (monophyletic) embryophytes, and largely derives from patterns suggested by characters other than microspores. Consecutively the microsporogeneses of representative plant groups, and several related topics are dealt with by skilful reviewers: charophytes, bryophytes, the polyphyletic group pteridophytes, the cycads and *Ginkgo*, conifers, angiosperms, exine biochemistry, tapetum function, germination, gene expression, the male-germ unit, and pollen biotechnology. Together they provide a stimulating and up-to-date basis for study and teaching. The volume concludes with a comprehensive index, and is also technically well-produced. In short, a must for students and teachers involved in plant phylogeny and the morphology of pollen and spores.

R.W.J.M. VAN DER HAM

Evolutionary Biology of the Marine Algae of the North Atlantic

D.J. Garbary and G.R. South (eds).

Springer-Verlag, Berlin. 1990. x + 429 pp. Illustrated, hardback, DM198.00. ISBN 3-540-51761-8.

This book, volume 22 of the NATO Advanced Science Institute Series G: Ecological Sciences, is an interesting, well-prepared (although not spotless) work on seaweed biogeography.

It contains 17 papers presented during the Fourth Seaweed Biogeography Workshop, a 5-day symposium held in St Andrews, New Brunswick, Canada in September 1989. Previous workshops in this series were held at Hamburg (1982), Groningen (1984) and Helgoland (1986), and were published in *Helgoländer Meeresuntersuchungen*. For the interested reader, this is a symposium volume in which evolutionary biogeography of groups of marine plants is studied in many modern ways. A section on 'Philosophical and Methodological Concerns', leads the way and both papers in this section stress that phylogenetic (or cladistic) biogeography, ideally, is the analysis of the relationship between areas of endemism as exhibited by several, often distantly related, groups. In the other 15 contributions, however, although several cladistic methods are used, an application of the area cladogram method is missing. These often narrative papers contain interesting hypotheses, which challenge all interested phycologists and marine biogeographers to

try and test them out. Papers deal with topics like the climatologic and oceanographic past of the North Atlantic, evolutionary ecology and adaptation, approaches to speciation, kelp evolution, taxonomy and biogeography of seaweeds, marine biogeographic provinces and the evolution of floras in the Arctic and Atlantic Oceans. Two indices, a taxonomic one and a subject index, conclude this volume, which is of great value to anyone interested in biogeography in general or in seaweed taxonomy of the North Atlantic and North Pacific Ocean.

W.F. PRUD'HOMME VAN REINE

Biological Invasions in Europe and the Mediterranean Basin

F. di Castri, A.J. Hansen and M. Debussche (eds). Kluwer, Dordrecht. 1990. ix + 463 pp. Illustrated, hardback, Dfl325.00, US\$175.00, UK£115.00.

The volume consists primarily of the revised texts of papers prepared for a 3-day workshop on biological invasions in Europe and the Mediterranean Basin, held in Montpellier in May 1986. The chapters are arranged in four sections: Introduction (one paper), Plant Invasions (10 papers), Animal Invasions (eight papers), and Mechanisms of Invasions (8 papers). Of the 47 contributors to the book, 36 are from France.

In the geological past, the distribution of plants and animals was determined by biological and environmental factors. Since the introduction and subsequent spread of agriculture, man has become a major agent in the dispersal of plants and animals to new territories. The last 400–500 years especially have witnessed the introduction of great numbers of alien species all over the world.

Seven chapters deal with man-induced, particularly post-1500 AD, plant introductions in Europe and the Mediterranean Basin. These papers give numerous examples of invasions of synanthropic plants, viewed from an historical (period of introduction), a geographical (region of origin of invader species) and an ecological perspective. Most of the permanently established alien species occur only in disturbed habitats, particularly in ruderal and segetal vegetations. M.D. Fox discusses the exchanges of invasive species between the five regions with a Mediterranean-type climate: Mediterranean Basin, Chile, California, South Africa, Southern Australia. Two chapters, one on charcoal analysis, the other on pollen analysis, treat the palaeoecological approach to the subject of natural and anthropogenic plant invasions.

The discussions in the chapters on animal invasions focus on one or a limited number of species, ranging from mammals to protozoans. Natural immigrations receive more attention than in the section on plant invasions e.g. G.R. Coope's chapter on Mediterranean

beetles in Pleistocene Northern Europe. P. Isenmann's paper on recent bird invasions demonstrates the difficulties one may encounter in distinguishing between the effects of climatic changes and those of the impact of man on the environment. Four contributions are wholly or in part devoted to invasion histories of parasites.

The section on mechanisms of invasions starts with a discussion (by J. Roy) of physiological, demographic and genetic attributes of plant invaders. The role of one or more of these characteristics is illustrated in the chapters on the invasion of *Dittrichia* (ex-*Inula*) *viscosa* in the northwestern Mediterranean Basin (J.P. Wacquant) and of *Dactylis glomerata* in Galicia, Spain (R. Lumaret). The other papers of the final section treat a variety of topics with a bearing on invasion processes.

This volume is not the 'synthesis book' originally envisaged, but it contains interesting contributions to the complex theme of biological invasions.

W. VAN ZEIST

Clonal Growth in Plants

J. van Groenendael and H. de Kroon (eds). SPB Publishing, The Hague. 1990. ix + 196 pp. Illustrated, paperback, Dfl65.00, US\$34.00. ISBN 90-5103-056-8.

Clonal growth in plants is a book originating from a workshop held in Schin op Geul (the Netherlands) 14–17 September, 1988. It cannot be looked upon as the proceedings of that meeting and neither is it a review or a textbook on clonal growth in plants. In effect the book is something in between. The 9 chapters, four on the regulation of clonal growth, four on the function, and one concluding chapter were written, apparently, after the workshop and consequently are more coherent than proceedings generally tend to be. On the other hand, the chapters can be read separately (and consequently show some overlap) distinguishing the book from a review or textbook. *Clonal growth in plants* is not an easy book to read. Much information, including both experimental data and models is crammed into a mere 187 pages. Readers not well versed in plant taxonomy and morphology will have to use the appendices in chapter one, but those not working in the rather specialized field of growth modelling in plants should study the original papers, as more often than not new or derived models are developed without much explanation of their predecessors. Nevertheless the interested and persistent reader will find much of value in this book. Data scattered in the literature are brought together in a coherent picture by using a limited number of general topics such as physiological integration, architecture, plasticity, risk spreading and resource acquisition.

Experimental data prevail in the first part, on regulation, whereas the second part, on function, is characterized by the development of models. Unfortunately, as several of the authors mention, there still is a gap between models and experimental data to test them. A point in case is the chapter on hierarchical selection and risk spreading in clonal plants. The effort of the authors (O. Eriksson and L. Jerling) to distinguish hierarchical levels is an intellectual challenge. However, the heuristic value of the exercise is small, as it is very difficult to distinguish such levels in practice. It is therefore a pity that there is no chapter devoted to the problems encountered when gathering basic demographic data on clonal plants, especially those that have a guerilla strategy and tend to lose physiological integrity early in their development.

One positive point about this book is the inclusion of vascular cryptogams and mosses; the former in a comparative way throughout most of the book (i.e. the chapter by Carlsson *et al.*), the latter in a separate chapter (by H.J. During). The inclusion of these groups certainly adds to the generality of treatment. *Clonal growth in plants* is a valuable source of reference to all those working with clonal plants. The price is a welcome deviation from the upward trend in the prices of scientific literature.

P. KAKES

Natte en Vochtige Ecosystemen (Wet and moist ecosystems)

J.Ph.M. Witte and R. van der Meijden.
KNNV, Eindhoven. 1990. 56 pp. Illustrated,
paperback, Dfl26.50 (including postage).
ISBN-90-5011-041.

In this booklet, the authors analyse the changes in wet and moist vegetation types in the Netherlands before and after 1950. Due to the floristic inventiveness of all higher plant species during both periods, indicative plant species are clustered to indicative groups. In combination with four soil types (fen, sand, silt, loam) the plant data are arranged into 12 ecotope groups. Their occurrence in the Netherlands is visualized by coloured maps, indicating three quality classes of occurrence: moderate, good and very good.

It is obvious that the amount of vegetation associated with eutrophic and polysaprobic water qualities has strongly increased from 1950 onwards, whereas vegetation associated with oligotrophic waters dramatically decreased. Although a lot of (over)simplification has been made, the results are astonishing and are illustrated in an excellent way, especially for political decision makers. The authors can be congratulated for reducing data sets to essentials. At the same time, it is obvious that only ecological follow-up studies can replace assumptions

and suggestions by real data on water and soil quality and hence are needed to test the indicative values.

W.H.O. ERNST

Pattern Formation in Plant Tissues

T. Sachs.

Cambridge University Press. 1991. xii + 234 pp.
Illustrated, hardback, UK£42.50, US\$75.00.
ISBN 0-521-24865-5.

Pattern formation belongs to the most fascinating and biologically important topics in botanical research. Yet, comparatively few botanists are nowadays engaged in its elucidation above the molecular or cell level. The present book is a very welcome review and idea book about pattern formation at (and above) the tissue level.

Following an introduction in which the problems of pattern specification and major concepts of biological patterning are discussed, subsequent chapters deal with the interactions of developing organs, hormones as correlative agents, callus and tumour development, polarization of tissues, canalization of vascular differentiation, cell lineages, meristemoid development as exemplified by stomata, expression of cellular interactions, apical meristems, localization of new leaves, and temporal control of apical differentiation. The final chapter offers generalizations about tissue patterning.

Hypotheses to explain the hormonal, spatial, and temporal controls of pattern formation are supported by elegant, and often delightfully simple, experiments. Many of the latter go back to research by the author himself. A number of earlier hypotheses on pattern formation such as pre-patterning or the idea that developmental events are evoked by a precise balance of specific substances are convincingly discarded. Instead the author offers a complementary set of patterning principles involving polarization, interactions with other plant parts, gradients, intracellular determination, interactions between neighbouring cells and packing of multicellular units. Finally the author declares himself in favour of epigenetic selection as a major principle of biological patterning. While the evidence presented for all complementary patterning mechanisms is quite convincing, the general role of epigenetic selection—however attractive as an explanatory model—is still largely based on speculation.

The book as a whole is very well written, conceptually coherent, and also honest in its admission of unsolved problems. Above all it succeeds in presenting quite complex problems in a lucid way. It is a must for all with an interest in plant differentiation and also highly suitable for teaching purposes at the advanced graduate level.

P. BAAS

Grondslagen van de Vegetatieve Vermeerdering—Meristemen en Orgaanvorming

J. Margara.

Dutch translation of *Bases de la Multiplication Végétative. Les Méristèmes et l'Organogénèse* by Ir. F.A. Hakkaart.

Publication of the Netherlands Society for Plant Cell and Tissue Culture. 1987. 296 pp. Illustrated, paperback, Dfl45.50 (Dfl35.50 for members of the Society) (including postage, to be ordered from NPVW, c/o Centre for Plant Breeding and Reproduction Research CPRO, P.O. Box 16, 6700 AA Wageningen, The Netherlands, by remitting the amount on Postgiro nr. 4240007 in the name of NPVW, Wageningen). ISBN 2-85340-379-3.

The practice of culturing plant tissues is increasingly being used for the rapid multiplication, selection and elimination of diseases etc. Judicious application of tissue culture needs adequate methodological and theoretical knowledge. In the Netherlands and Belgium there is a lack of Dutch handbooks for practitioners, research scientists and students. To meet the demand, the Netherlands Society for Plant Cell and Tissue Culture, took the initiative to publish a Dutch translation of Margara's excellent book on the fundamental aspects of tissue culture.

The book deals with the phenomena of differentiation and dedifferentiation, describes the principles of vegetative multiplication and explains about the structure and function of meristems. In addition, it illustrates the potential of meristems and explants to form adventitious organs or somatic embryos in tissue culture under sterile and controlled conditions. The book contains many well-presented Tables, Figures and Plates and gives an extended vocabulary. In the Dutch translation, two practical subjects, i.e. vitrification in tissue culture, and the transfer of tissue culture products to soil, are treated in an appendix.

In conclusion, this attractive and easily-accessible publication provides a great deal of information, which is highly useful in basic research and practical application in the field of in-vitro culture.

L.J.W. GILISSEN

Plant Tissue Culture. A Classified Bibliography 1985-1989

S.S. Bhojwani, V. Dhawan and R. Arora.

Elsevier, Amsterdam. 1990., xii + 406 pp. Hardcover, US\$125.75, Dfl220.00. ISBN 0-444-88668-0.

In the period 1985-1989, thousands of articles were published on the subject of plant tissue culture. This book presents a classified bibliography of about 6000 papers and is a supplement to a previous volume dealing with the articles published up to 1985.

A bibliography is necessary for several reasons. First, it helps to initiate new researchers in the field and in this respect, the book under review is very practical. For scientists already working in the field, a bibliography should come up with articles they had previously overlooked or publications that occurred in uncommon journals. With respect to this, the present bibliography often fails. I have checked various references and journals in which articles on tissue culture appear infrequently, and found many omissions. For example, the abstracts of the meetings of the Dutch Royal Botanical Society, published in this journal, are absent.

There is in every bibliography the problem of categories. In the present bibliography, the types of categories are adequate, but many references might have been categorized differently. This is often, but not always, a matter of opinion. The section on root culture, for example, deals both with root cultures *per se*, and with the formation of adventitious roots on microcuttings, whereas the section on micropropagation also contains articles on the latter topic. The book ends with an index of plant names, but there is unfortunately no author index. Taking into account the many minor errors I came across and the high price of the book, I do not recommend libraries to purchase it.

G.J. DE KLERK

Plant Tissue Culture: Applications and Limitations. Developments in Crop Science 19

S.S. Bhojwani (ed.).

Elsevier, Amsterdam. 1990. viii + 461 pp. Illustrated, hardcover, US\$120.00, Dfl210.00. ISBN 0-444-88883-7.

The possibility of cultivating plant tissues *in vitro* for an unlimited period was reported for the first time in 1939. Practical applications were explored soon afterwards. During the past decades, there has been a rapid expansion in the application and plant tissue culture is currently employed for various purposes: propagation, eradication of endogenous pathogens, breeding and production of organic chemicals. In the book under review, tissue culture as a means to produce pathogen-free plants has been omitted and only one short chapter deals with the production of secondary metabolites. Micropropagation (both conventional and via somatic embryos) is covered in five chapters and applications in breeding (induction of haploids, embryo rescue, genetic engineering, somaclonal variation as a source of new variation for the breeder, germplasm storage) in seven chapters. Furthermore, there are general chapters on the current status of plant tissue culture, regeneration,

morphogenesis, chromosomal changes, expectations of breeders, and plant tissue culture in the 21st century.

Many books have been published on the applications of plant tissue culture. The special purpose of the book under review was to include not only brief descriptions of the recent developments, but also critical assessments of the applications, current problems limiting application of tissue culture and possible research trends in the next decade. In general, the chapters in the book excellently review the state of the art with regard to research and application. In addition, they also identify the main problems that block the broad application of plant tissue culture. In conventional micropropagation, these problems are somaclonal and epigenetic variation, and high costs; in micropropagation via somatic embryos, the problems are with recalcitrance to regenerate and the control of embryo development. In breeding, somaclonal variation and recalcitrance to regenerate are the inhibitory factors. In many chapters, the emphasis is on the present state of the art in research, and application, problems and future trends are discussed only briefly. Therefore, the book is not so very different from the many other books on the same topic as it claims to be. However, it is very handy for the reader that the various topics are discussed separately. The major omission in the book, however, is the lack of a general discussion of the main problems encountered in tissue culture. When somaclonal variation and recalcitrance to regenerate are so very important, why are they treated separately? Regeneration is dealt with in one chapter, but the author does not tell us much about the background of the phenomenon of recalcitrance to regenerate. In fact, this chapter provides only a somewhat outdated review of the many factors that have been found to affect regeneration in tobacco epidermal strips. The background to somaclonal variation is dealt with in an excellent paper by Nuti Ronchi, but she confined herself to changes in ploidy level.

In conclusion, this book often excellently summarizes the present developments in most areas of plant tissue culture. However, the aim of a critical assessment is only partly fulfilled.

G.J. DE KLERK

Proceedings of the Fifth International Symposium on Iron Nutrition and Interactions in Plants

Y. Chen and Y. Hadar (eds).

Kluwer Academic Publishers, Dordrecht. 1991. xii + 377 pp. Illustrated, hardcover, Dfl300.000, UK£103.00, US\$196.00. ISBN 0-7923-1095-0.

Many agricultural crops worldwide, especially in semi-arid climates, suffer from iron deficiencies. These

deficiencies are typically found among sensitive crops grown in calcareous soils which cover over 30% of the earth's land surface. They may lead, in extreme cases, to complete crop failure.

Uptake and subsequent handling of iron presents problems to plants: the ferric ion is not soluble at physiological pH values, and ferrous is rapidly oxidized to ferric in the presence of oxygen. Plants have developed special capacities which enable them to extract iron from the soil and to bring it where it is needed.

For about 10 years now, the study of iron metabolism in plants has attracted researchers from outside the agricultural world. This interest, unhampered by demands for immediate application has resulted in a rapid gain of new insights. Every two years since 1981, a symposium was organized on iron nutrition and interactions in plants. The contributions were published until now as special issues of the *Journal of Plant Nutrition*. The 1989 meeting in Jerusalem is covered by this volume; most of the papers were also published in *Plant and Soil*, 130 (1991).

The sections on the role of siderophores produced by microbes and by the plants themselves in iron nutrition are most interesting in this volume. The question to which degree microbial siderophores can contribute to iron uptake by plants is, as yet, unsolved. It may seem rather irrelevant whether a ferric siderophore can enter a plant as such or that it should first be degraded by an extracytoplasmic microorganism or enzyme. Nevertheless, this question may very well be related to the equally unsolved but economically much more interesting one of the influence of microbial siderophores on crop yields. If this book can increase the understanding of these problems by one-millionth, it is still a good buy for its price.

H.F. BIENFAIT

Dutch Elm Disease—The Early Papers: Selected Works of Seven Dutch Women Phytopathologists

F.W. Holmes and H.M. Heybroek (transl. and eds). APS Press, American Phytopathological Society, St. Paul MN. 1990. 154 pp. Illustrated, hardcover, US\$19.00. ISBN 0-89054-110-8.

The 'Dutch' in 'Dutch Elm Disease' is a tribute to the country that pioneered the research on the disease after it was recognized in 1919, when it had spread over most of Belgium, the Netherlands and parts of northern France. Interestingly, the principal researchers on the disease were women. This volume contains translations of 10 crucial research reports by six women authors published originally in Dutch.

It begins with the 1921 classic *An unknown disease among the elms* by Dina Spierenburg and ends with the 1936 annual research report of the Phytopathology Laboratory in Baarn by Johanna C. Went. The translations reflect the originals so precisely that any words added by the translator to clarify the meaning or improve the English sentence structure are placed in brackets. All the original drawings and photos are included. The book begins with a short historical introduction and each group of papers is preceded by a brief biographical sketch of the author. Excerpts from an historical review of 50 years of Dutch Elm Disease research by a seventh woman plant pathologist, Louisa Kerling, round off this small volume.

K. BACHMANN

Tip Growth in Plant and Fungal Cells

I.B. Heath (ed.).

Academic Press, San Diego CA. 1990. x + 351 pp.

Illustrated, hardcover, US\$85.00.

ISBN 0-12-335845-0.

It is a bit surprising to find a chapter on neuronal tip growth in a book on tip growth in plant and fungal cells. On the other hand, its inclusion emphasizes the objective of the editor to foster a cross-fertilization of ideas coming from different methods of studying this widespread phenomenon. Indeed, the book offers a useful survey of biological systems in which tip growth occurs, such as hyphal growth, pollen tube growth, root hair growth and fibre growth (cotton hairs). Moreover, it focuses on the various cellular processes which are involved, such as the role of electric currents and calcium ions. Also, the role of vesicle synthesis and distribution by the endomembrane system is clearly discussed in various chapters, as are the influence of cell wall architecture and cytoskeletal organization.

The chapters are well-written and provide recent information about both systems and processes. Although the broadness of this approach represents the biological diversity involved, it also hampers integration of all chapters into one big completed jigsaw puzzle. It would possibly be good to select one system in which to study combined physiological processes in detail. It would stimulate some cross-links, which are now too often absent, e.g. between the chapters on the endomembrane system and the cytoskeletal actin filaments and microtubules.

The book is well edited, on glossy paper, doing justice to the many high quality photographs. It is a useful reference guide to both animal and plant researchers trying to elucidate this intriguing biological process.

J.H.N. SCHEL

Spatial Processes in Plant Communities

F. Krahulec, A.D.Q. Agnew, S. Agnew and H.J. Willems (eds).

SPB Academic Publishing, The Hague. x + 259 pp.

Illustrated, hardcover, Dfl85.00, US\$50.00.

ISBN 90-5103-041-X.

This volume is the record of a workshop meeting held in September 1989 at Liblice, hosted by the Czechoslovak Academy of Sciences. It is a bundle of 22 papers, rather than a book. 'Every participant was able to choose his/her own approach to the problems of spatial processes in vegetation. There is no consensus, of course, on the value and importance of the various possible scales of research into vegetation process'. This quote taken from the preface does not stimulate further reading, though according to the editors the contributions provide 'a challenging diversity of reports'. The introductory chapter continues to discourage the reader by stating: 'Theoretical papers are included, but most are case studies', thus suggesting that the two approaches remain separated. Finally, four out of the five points which are raised 'to summarize these proceedings', should in my opinion have been recognized as preconditions for vegetation research. Indeed, while reading the first 98 pages of this volume, one gets the overall impression (there are a few exceptions) that interesting field data have been combined with advanced techniques of data management to underline known knowledge. The book concludes, for example, (i) that evidence obtained from manipulative experiments is usually stronger than that deduced from observed patterns, and (ii) that the frequency of significant species associations may be considered neither as a measure of biological organization, nor as a measure of competition in the community.

The second part of the volume is more interesting, because at least some of the papers indicate whether or not general perspectives are to be expected from certain types of research. Söderström deduced an interesting view on persistence and extinction of local populations of bryophytes from studies of dispersal ability and population dynamics. Hughes modelled crop losses as a result of the spatial pattern of the attack by larvae of the wheat bulb fly on *Triticum aestivum*. Hara *et al.* analysed processes of regeneration of a natural birch (*Betula ermanii*) population in terms of growth and allocation patterns of individual trees. Agnew & Gitay honestly confess the difficulty of establishing correlations between resource patterns (Ca, P) and community patterns on a 40 × 40 mm² scale. Symonides & Wierzychowska also found only weak correlations between vegetation structure and soil characteristics on a 1 × 1 m² scale in an old-field succession, because the properties of soils changed more slowly than did vegetation structure. They missed the opportunity to discuss 'soil driven

dynamics' vs. 'transient dynamics'. Two papers concern coexistence. Rynchnovská & Jakrlová discuss the ecophysiological basis (mainly differences in transpiration rate) of the alternating dominance of a 'competitor' and a 'stress-tolerator' in a seminatural *Nardus stricta* grassland, and Soukupová treats the coexistence of two 'competitors' in a sedge-grass marsh. The title of the latter contribution ('coexisting competitors . . .') might mislead the reader, because it

suggests an evaluation of the principle of competitive exclusion. Instead the author illustrates that the two species avoid competition with each other due to their different life history traits. I would have preferred reading conclusions like: 'Competitors' are capable of developing a high competitive ability, but do not always compete, whereas 'stress-tolerators' may compete for nutrients.

J. VAN ANDEL