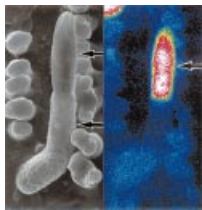


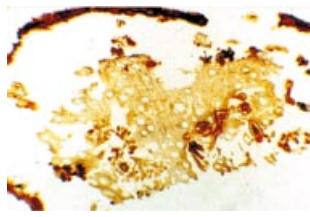
Plant hormone binding sites (Botanical Briefing)

Napier (pp. 227–233) assesses recent advances in the identification of hormone receptors and in the understanding of hormone binding. Although progress has been steady, the review reveals that no one technique has been more successful than any other in discovering receptors. Some deductions concerning the structure of binding sites are presented, based on crystallographic details of an auxin-binding site and on the classification of several other receptors into protein superfamilies.



Silica deposition in leaf tissues of bamboo

Investigations of silica deposition in leaf tissues of bamboo by Motomura *et al.* (pp. 235–248) clarify the deposition process and its significance in the Poaceae. In epidermal tissue, cork cells, guard cells, long cells and subsidiary cells consistently deposit only small amounts of silica while other cell types deposit dense silica. The observation indicates that silica deposition is developmentally regulated.



Surface root mat and mineral nutrient uptake in *Eucalyptus* plantations

A dense root mat, adhering to decomposing organic material above the mineral soil, is present in Congolese *Eucalyptus* plantations. Laclau *et al.* (pp. 249–261) develop input–output budgets of nutrients showing that the root mat actively intervenes in the flux of nutrients derived from biodegradation of the forest floor. In this way, transfer of dissolved nutrients to deeper soil horizons is much reduced.



Modelling shoot growth in grapevine

A generic modelling approach, based on thermal time, is used by Lebon *et al.* (pp. 263–274) to analyse variability of shoot architecture in grapevine (*Vitis vinifera*). Main stem development is well-described by a stable thermal-time based programme whereas branch development is effectively analysed according to the modular structure of the stem. Variations in leaf expansion rate are outcomes of intra- and inter-shoot trophic competition and of environmental conditions.



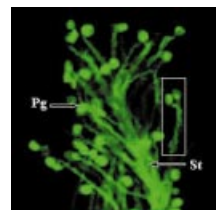
Xylem functionality in apples

The xylem in developing apples becomes progressively dysfunctional as the fruit develops. This may reduce the import of xylem-borne elements, particularly calcium. Drazeta *et al.* (pp. 275–282) show an earlier onset of xylem dysfunction in the cultivar ‘Braeburn’ than in ‘Granny Smith’. This difference is linked to greater susceptibility in ‘Braeburn’ to the calcium-related disorder, bitter pit.



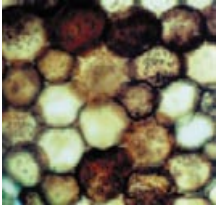
Phylogeny of Valerianaceae

A new hypothesis for the phylogeny of Valerianaceae is formulated by Hidalgo *et al.* (pp. 283–293) based on *matK* and ITS sequence analysis. Their results confirm the paraphyly of *Valeriana*, and the need to re-define generic limits in the Valerianinae. Sequence polymorphism in the *matK* gene is also identified.



Pollen dispersion, viability and pistil receptivity

Low sexual reproductivity is typical for *Leymus chinensis*, a rhizome grass widely distributed in eastern regions of the Eurasian steppe. Huang *et al.* (pp. 295–301) show that low pollen viability, short pollen longevity and short pistil receptivity all contribute to low seed production.



Peroxidase expression depends on an N-terminal peptide extension

In attempts to generate transgenic tobacco plants with targeted expression of a synthetic horseradish peroxidase gene, **Kis et al. (pp. 303–310)** explore the roles of N- and C-terminal extensions. They show that while N-terminal extension is essential for efficient expression it does not lead to secretion of recombinant protein since the bulk of peroxidase activity remains in the cytosol.



Performance of interspecific hybrids of domesticated rice and wild rice

Song et al. (pp. 311–316) comprehensively evaluate F₁ hybrid seedlings derived from crosses between *Oryza sativa* and *O. rufipogon*. They conclude that introgressed genes from *O. sativa* could persist in wild rice populations after passing successfully through sexual reproduction.



Genome size in *Arabidopsis thaliana*

The exact genome size of *Arabidopsis thaliana*, one of the smallest for a plant, has been much discussed. **Schmuths et al. (pp. 317–321)** compare populations across the entire Eurasian range of the species. Considerable intraspecific variation in genome size is revealed in the diploid genome and two accessions are shown to be tetraploid.



Autopolyploid origin of *Thymus loscosii*

Allozyme data can help to distinguish between autopolyploids and allopolyploids. Accordingly, **López-Pujol et al. (pp. 323–332)** use allozyme markers to examine genetic variation and banding patterns of *Thymus loscosii*. Their results support the previously proposed hypothesis of an autopolyploid origin for this endangered thyme.



Wave-induced forces on submerged plants

Shallow lakes can develop waves that are potentially damaging to aquatic species and this may hinder ecological restoration. **Schutten et al. (pp. 333–341)** develop a theoretical model to predict the forces tending to uproot plants or break their stems. Forces measured in experiments with artificial and real plants in a wave flume agree well with model predictions.