



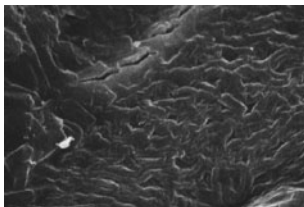
Plants and Altitude – Revisited Viewpoint

The impact of altitude-associated changes in radiation, humidity, temperature and partial pressures of carbon dioxide and oxygen on gas exchange is illustrated by Gale (p. 199) with data from field and laboratory experimentation on both leaves and whole plants. The author highlights the importance of modelling all these factors since they vary throughout the day and between seasons.



Phylogeny of the Boragineae

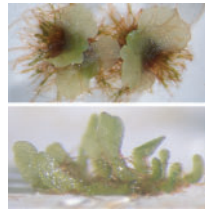
Phylogenetic aspects of the Old-World tribe Boragineae, a major and taxonomically critical group within the family Boraginaceae, are still unknown. Hilger *et al.* (pp. 201–212) outline relationships in the tribe using nuclear and chloroplast DNA markers. Results support the monophyly of the group and an early split into two main clades, each of which includes several subclades.



Palisade cuticle determines seed coat permeability in soybean

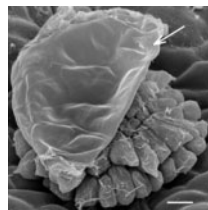
Some soybean cultivars begin to imbibe water within a few minutes of soaking while others remain impervious for days. Ma *et al.* (pp. 213–228) show these differences are explained by the extent to

which the cuticle possesses minute cracks through which water can penetrate. Seed with an impermeable coat has no cracks and is mechanically stronger than more permeable seed.



Density affects gametophyte growth and sexual expression

Density of fern gametophytes is an important factor affecting their sexual expression and size. Huang *et al.* (pp. 229–232) demonstrate how density affects gametophyte size and how size is related to gametophyte gender in *Osmunda cinnamomea*.



Changes in trichomes and in epicuticular flavonoids during leaf development in birch

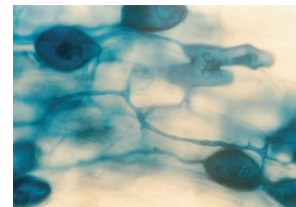
Trichome density and the composition of their exudates may have important consequences for plant adaptation to abiotic and biotic factors. Valkama *et al.* (pp. 233–242) show a rapid decline in the density of glandular trichomes and in the concentrations of flavonoid aglycones in developing leaves of three birch taxa. This suggests a potentially important role for trichomes during the early stages of leaf development.



Phenotypic selection on flowering time in a tropical orchid

More than one third of the Orchidaceae utilize deceit pollination, in which

flowering synchrony is predicted to be disadvantageous. Parra-Tabla and Vargas (pp. 243–250) reveal the occurrence of phenotypic selection on the flowering time of *Myrmecophila christinae* through female and male pollination success. They also show that selection is variable in both time and place.



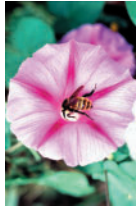
N and P accumulation in *Vicia faba*

Arbuscular mycorrhizal fungi (AMF) promote biomass production and photosynthetic rates by increasing the ratio of P to N accumulation. Jia *et al.* (pp. 251–258) show that, irrespective of the inorganic source of N (e.g. NO_3^- or N_2), photosynthetic N use efficiency is enhanced by increased P supply due to AMF.



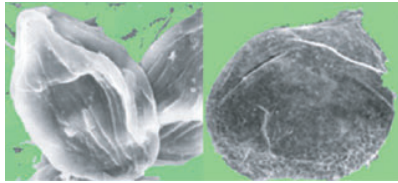
Effects on herbivores of genetic variability and habitat of host plants

Attack by free-living and gall-forming insects within and between populations of a common tree of the Brazilian savannas is examined by Gonçalves-Alvim *et al.* (pp. 259–268). The authors determine the extent to which attack is affected by genetic variability (assessed by RAPD markers), by extent of sclerophylly and other phenotypic characteristics, and by habitat.



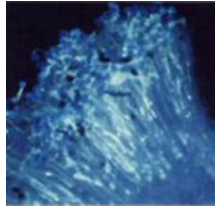
Floral constraints to pollination in *Ipomea*

Galetto and Bernardello (pp. 269–280) examine nectar and nectary features in six *Ipomoea* species (morning glory) in relation to differences in their pollinator guilds (bees, hummingbirds, sphingids). They suggest that structural constraints such as flower length play a role in determining nectary size and volume of nectar secreted.



A new Permian gnetalean cone

The cone of *Palaeognetalean auspicia* is shown by Wang (pp. 281–288) to be the earliest known gnetalean cone from the Late Permian to be found in northern China. It exhibits features of both gnetaleans and partial Palaeozoic conifers and provides fossil evidence to support recent findings by molecular phylogeny. The cone is bisexual, with the asymmetrical ovules and ribbed pollen that are unique to extant Gnetales.



Unilateral incompatibility in *Capsicum*

Unilateral incompatibility (UI) occurs when pollinations between species are successful in one direction but not in the other. Onus and Pickergill (pp. 289–295) suggest that unilateral incompatibility in *Capsicum* has not arisen to prevent introgression of self-compatibility into self-incompatible taxa, but as a by-product of divergence of the *C. pubescens* complex from the remainder of the genus.



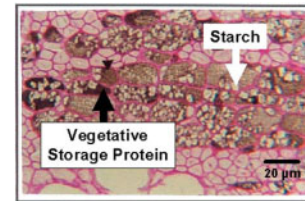
Acid phosphatase, P uptake and chickpea/maize intercropping

Interspecific promotion of P uptake by roots is known to occur in intercropping systems. Li *et al.* (pp. 297–303) quantify acid phosphatase secreted from chickpea roots and indicate that the level of activity enhances P uptake from an organic source (phytate) by closely associated maize plants.



Divergent results from experimental pollinations in a species with late-acting self-incompatibility

With the late-acting self-incompatible species *Ceiba chodatii*, Gibbs *et al.* (pp. 305–310) highlight the following enigma. Whilst chase (self followed by cross) pollinations imply slower self pollen tube growth in the style, mixed pollinations indicate that self and cross tubes arrive synchronously at the ovary and compete for ovules.



Initial N reserves, residual leaf area and alfalfa regrowth

Meuriot *et al.* (pp. 311–321) assess regrowth of alfalfa after cutting. They show that residual leaf area has a larger effect on final forage production than initial N reserves while the reverse is true for N uptake rate and final total N content. Taproot N storage as protein, especially vegetative storage protein, allows nitrate uptake to occur at significant rates.