Content*Snapshots*

The theory and application of plant competition models: an agronomic perspective

Mathematical models are an essential and integral part of the study of plant competition. **Park *et al.* (pp. 741–748)** provide an overview of our current understanding of competition at the individual plant level and review the development of phenomenological and mechanistic mathematical models of plant competition, particularly in their application to the management of agricultural weeds.

Association of cpDNA and mtDNA haplotypes in *Prunus spinosa*

Mohanty *et al.* (pp. 749–755) reveal that chloroplast DNA in populations of *P. spinosa* is more diverse than is mitochondrial DNA. A strict association between chloroplast and mitochondrial DNA haplotypes indicates conjoint inheritance of the two genomes. The chloroplast and mitochondrial DNA haplotypes are seen to be phylogenetically related but geographically unrelated.

Effects of drought and salinity on photosynthesis

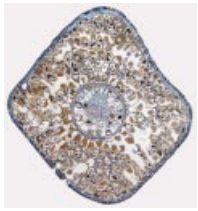
Photosynthesis by *Lycium nodosum* is shown by **Tezara *et al.* (pp. 757–765)** to be co-limited by stomatal and non-stomatal factors under conditions of water deficit and salinity and in the absence of chronic photoinhibition. These features, together with a marked capacity for osmotic adjustment, help to explain the salt tolerance of *L. nodosum* in coastal habitats.

Hydrotropism of pea roots in vermiculite

The significance of hydrotropism in influencing the direction of root elongation in soil or similar media has been unclear hitherto. **Tsuda *et al.* (pp. 767–770)** demonstrate positive root hydrotropism can occur when a steep and stable gradient in water potential is applied across roots of the agravitropic mutant of pea growing in vermiculite. This finding demonstrates that hydrotropism is not restricted to air-grown roots.

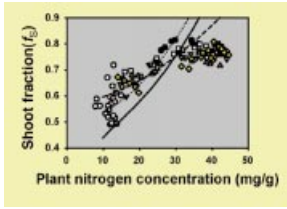
Reproductive ecology of *Tetratheca juncea*

Concern for pollinator decline has become a global issue. **Gross *et al.* (pp. 771–777)** investigate fecundity levels in the threatened shrub *Tetratheca juncea*, a species that has undergone a major range contraction in the last 200 years. The species is facultatively outcrossing with flowers presented for buzz pollinators. Across populations fruit-set varied widely and the pollinators were elusive, a feature common in *Tetratheca*.



Drought and ozone stresses affect spruce needle structure

Young spruces were exposed to ozone and drought stress for 4 years in open-top chambers in Sweden. **Kivimäenpää *et al.* (pp. 779–793)** show how drought-induced nutrient imbalance and memory-effects are reflected in cell and tissue structures of needles. They highlight the role of mitochondria, peroxisomes and vacuoles in responses to ozone.



Root : shoot ratios, optimization and nitrogen productivity

Varying the allocation of resources between roots and shoots allows plants to improve their fitness in different environments. **Ågren and Franklin (pp. 795–800)** show that observed root : shoot allocations could be explained if plants are assumed to adjust their nitrogen concentrations and root : shoot ratios such that the relative growth rate is maximized.

Continued overleaf

Iron toxicity and phosphorus deficiency in common reed

Phragmites australis is used in many wetlands designed to treat water containing high concentrations of Fe. **Batty and Younger (pp. 801–806)** examine growth and Fe and phosphate uptake by seedlings grown in a range of Fe concentrations. Direct Fe toxicity and phosphate deficiency could not adequately explain reductions in growth at high Fe concentrations.

Pollination ecology of South African plants

The asclepiads are mainly tropical plants that rival the orchids in terms of floral specialization. However, their pollination ecology is much less well known, particularly in southern Africa, an area of high asclepiad diversity. **Ollerton *et al.* (pp. 807–834)** present data on patterns of specialization, pollination niche overlap and floral biology in the first detailed study of an assemblage of asclepiads in southern Africa.

Epicormic buds in Wollemi Pine

Undamaged specimens of the rare and ancient Wollemi pine (*Wollemia nobilis*) routinely produce epicormic buds, an unusual development for a conifer. **Burrows *et al.* (pp. 835–844)** show that small meristems are located in the leaf axils and beneath the stem surface. Some of these meristems develop slowly into buds beneath the bark. Such buds are a ready source of epicormic shoots and thus replacement leaders, branches and leaves.