

## Potassium transport in leaves

Over millions of years, plants have evolved a sophisticated network of  $K^+$  transport systems. **Shabala (pp. 627–634)** assesses  $K^+$  transporters in various leaf tissues and analyses electrophysiological and molecular mechanisms coordinating  $K^+$  transport between various leaf cells in changing environments.



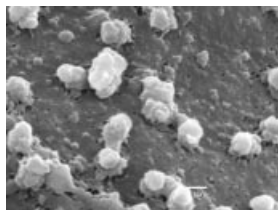
## Seasonal and altitudinal variation in oregano

The optimal altitude for the growth *Origanum vulgare* is identified by **Kofidis et al. (pp. 635–645)** using a combination of morphological, anatomical, cytological, morphometric and physiological features of the leaves.



## Species differences in antirrhinum

Allozymes are useful molecular markers for species discrimination in the genus *Antirrhinum*. **Mateu-Andrés and Segarra (pp. 647–655)** establish taxonomic relationships of taxa related to *A. graniticum* and *A. meoanthum*. Their results support separation of the taxa into two subsections, as previously published, but disagree with the arrangement of species within them.



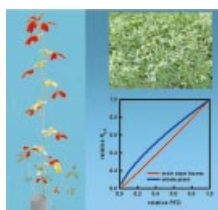
## Morphological and ultrastructural diversity of orbicules in Gentianaceae

Minute granules of sporopollenin, called orbicules, can be observed on the walls of tapetum cells. **Vinckier and Smets (pp. 657–672)** investigate orbicules in 53 Gentianaceae species, covering all different tribes and subtribes recently recognized in the family by *Struwe et al. (2002)*. The systematic usefulness of orbicule data is discussed in comparison with the latest systematic insights into the make up of the Gentianaceae.



## Cluster roots, Fe deficiency and ethylene

Formation of cluster roots is an important adaptation that enhances mineral nutrient acquisition. **Zaid et al. (pp. 673–677)** examine the promotion of cluster roots in *Casuarina glauca* caused by iron deficiency. Experiments with inhibitors of ethylene production and action, and with stimulators of ethylene production implicate the gas in regulating cluster root formation.



## Vertical leaf nitrogen distribution

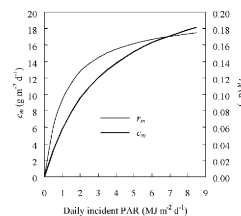
Vertical gradients of leaf nitrogen ( $N_{LA}$ ) optimize N utilization with respect to carbon assimilation. **Lötscher et al. (pp. 679–688)** show that the steepness of the  $N_{LA}$  gradient correlates with the N status

of the plant in three grassland species.  $N_{LA}$  gradients are shown to steepen with increasing shoot mass and increasing N shortage in the plant.



## Modelling phases of photoperiod sensitivity

Many flowering plants respond differently to photoperiod depending on their stage of development. An innovative model devised by **Adams et al. (pp. 689–696)** allows the phases of photoperiod sensitivity to be quantified using both flowering times and leaf numbers obtained from reciprocal transfer experiments. This model is tested on a range of antirrhinum cultivars.



## Using the expolinear growth equation for modelling crop growth in year-round cut chrysanthemum

Expolinear growth equations comprise biologically meaningful parameters such as maximum relative growth rate and maximum growth rate. **Lee et al. (697–708)** build a simple empirical model of crop growth rate for year-round cut chrysanthemum by using a rectangular hyperbolic relationship with daily incident photosynthetically active radiation (PAR). The model is shown to estimate dry mass production closely in several independent experiments, using leaf area index and daily incident PAR as inputs.

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### Genome size diversity in coffee

Modern flow cytometric methods incorporating internal standards and appropriate experimental designs can be used to identify differences in genome size as small as 0.03 pg. **Noirot et al. (709–714)** examine 15 african *Coffea* species that include six new taxa and find interference from a variable caffeine content. True genome sizes are estimated after taking this interference into account and are related tentatively to adaptive traits and speciation.



### An unusual pollination guild

The reproductive biology of *Butea monosperma*, an attractive and

economically important leguminous tree of the Indian Subcontinent is described by **Tandon et al. (pp. 715–723)**. The authors highlight the involvement of the three-striped squirrel (*Funambulus tristriatus*) and the purple sunbird (*Nectarinia asiatica*) in pollination. Several other birds that visit the flowers fail to effect pollination regularly and are merely nectar robbers.



### Bats pollinate and disperse seeds of a rainforest plant

Few plants are pollinated and dispersed by the same animal type. **Sazima et al. (pp. 725–730)** examine the relationships between such a plant and various species of bat in the rain-forest of Brazil. *Dyssochroma viridiflorum* (Solanaceae) is shown to depend entirely on leaf-nosed bats for its reproduction and attracts both flower-bats and fruit-bats to pollinate its flowers and distribute its seeds.



### Pollinator-dependence

*Aechmea pectinata* is a self-incompatible bromeliad with inconspicuous flowers and found in Brazil. It has a mainly clumped distribution and its aggregated individuals are likely to be clones. **Canela and Sazima (pp. 731–737)** show that *A. pectinata* depends on humming-birds for its pollination and that successful fruit set is related to the spatial distribution of individual plants and to interactions among hummingbirds.