



## Roles of overwintering fronds in a *Dryopteris*

Leaves of *Dryopteris crassirhizoma* survive winter under snow.

**Tani and Kudo (pp. 263–270)**

find that these overwintering leaves possess only small reserves of carbon and minerals and undergo limited photosynthetic activity, indicating a minor contribution to subsequent growth in spring.



## Chromosome variability in *Selaginella*

*Selaginella* is the largest genus of heterosporous pteridophytes.

**Marcon et al. (pp. 271–276)** report remarkable levels of variation between species in terms of chromosome number and size, and in number of rDNA sites.

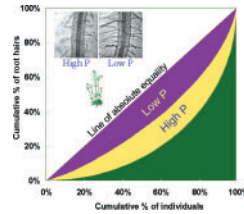


## Genetic variability and founder effect in introduced populations of the pitcher plant

Rapid genetic evolution may contribute to the success of invasion.

**Parisod et al. (pp. 277–286)** show that, in Switzerland, *Sarracenia purpurea* circumvented deleterious effects of its introduction by restricting

local gene flow, purging deleterious alleles and undergoing selection for inbreeding due to co-adaptation between loci.



## Phosphorus and inequality of root hair density in *Arabidopsis*

Biological responses vary in their uniformity. **He et al. (pp. 287–293)** demonstrate the use of the Gini coefficient to evaluate inequality of response to environmental and hormonal factors regulating root hair development in *Arabidopsis thaliana*. Low phosphorus availability is shown to be the predominant signal leading to more uniform emergence of root hairs.



## Fine-scale clonal structure and diversity in *Ilex leucoclada*

Mode of reproduction (sexual vs. asexual) can have a large effect on genetic variation and its spatial distribution. Using DNA markers to identify genets, **Torimaru and Tomaru (pp. 295–304)** demonstrate differences in clonal diversity between patches and a skewed distribution of genet size within patches of this dioecious shrub.



## Population genetic structure of endangered Buddhism tree

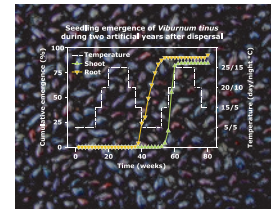
**Wang et al. (pp. 305–313)** show that populations of *Neolitsea sericea* found in

the Zhoushan archipelago of China possess low levels of genetic variability, and that cultivated populations are less diverse than natural populations. They conclude that removal of plants from the wild for horticulture purposes has eroded the level of genetic variation.



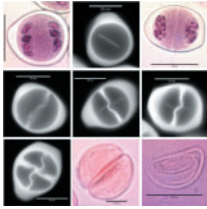
## Predictive modelling of above- and below-ground biomass

Ecologists have long sought a mathematical model that predicts above- and below-ground biomass across a broad spectrum of species. **Niklas (pp. 315–321)** provides such a model, tests its performance using a large recently assembled database, and shows that, on average, below-ground biomass scales isometrically with respect to above-ground biomass.



## Slow germination and seedling emergence in *Viburnum tinus*

Seedlings of *Viburnum tinus* normally emerge only after a delay of 1.5 years with germination phenology. **Karlsson et al. (pp. 323–330)** explain this in terms of a weak morphophysiological dormancy combined with a slow germination process, where different temperatures favour particular development stages.



### Microsporogenesis ontogenic trajectories leading to monosulcate pollen in Asparagales

Monosulcate is the most common type of pollen in monocots.

**Penet et al. (pp. 331–343)** describe seven different developmental pathways involving variation in microsporogenesis that result in the formation of monosulcate pollen within the order Asparagales. This variation is discussed in an evolutionary framework.



### Diversified and conserved organ morphologies

The flowers of Iberian Papilionideae are morphologically conserved organs whose parts tend to covary isometrically, whereas fruits are remarkably diversified in form. **Herrera (pp. 345–350)** uses low-power quantitative data from a recent systematic survey of Iberian Papilionideae to establish major patterns of phenotypic correlations and organ size covariation for this group.



### Tree root system architecture in sloping land

Anchorage is one of the main functions of root systems. **Di Iorio et al. (pp. 351–361)** show that, on clayey soils, tree root system architecture is strongly affected by the slope of the land and suggest that root asymmetry is an adaptive growth form that increases tree stability.



### Drought effects and water sharing in *Opuntia ficus-indica*

Drought can damage *Opuntia ficus-indica* when mother cladodes, planted during the dry spring season, develop young daughter cladodes. **Pimenta-Barrios et al. (pp. 363–369)** find that daily carbon gain and the relative water content of mother cladodes decrease with increasing number of daughter cladodes, especially during drought. Water movement from mother to daughter cladodes may be responsible.



### Distyly and functional gender in *Palicourea padifolia*

Various floral characters and attributes of *Palicourea padifolia* attract and reward pollinators to different extents, suggesting gender specialization. However, **González et al. (pp. 371–378)** find that functional gender expression of either floral morph is inconsistent through time, highlighting a need of long-term studies of distylous, perennial species to detect patterns of gender specialization.



### Ionic strength and cultivar strongly affect Al toxicity in rice

**Watanabe and Okada (pp. 379–385)** show that, under acidic conditions, aluminium tolerance in indica cultivars is much lower than in japonica cultivars when the ionic strength of solution cultures is low. However, this difference is eliminated when ionic strength is increased, suggesting that the electrochemical characteristics of root tip cells differ in indica and japonica rice.