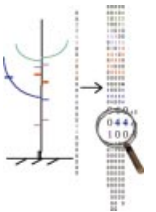


ContentSnapshots



Interactions among induced resistance against pathogens and herbivores

Interactions between induced systemic resistance and induced herbivore resistance are considered by **Heil and Bostock (pp. 503–512)**. Both cross-resistance and trade-off phenomena are reported. To explain these contradictory results, the authors distinguish an ‘elicitation’, a ‘signalling’ and a ‘production’ level. Interactions are assumed to act independently at all three levels.



Modelling apple tree branching patterns

The distribution of laterals along trunks is a key point for tree architecture. **Costes and Guédon (pp. 513–523)** show that branching on 1-year-old apple tree trunks is organized in successive zones that have a similar location. The findings hold for six cultivars with diverse branching and fruiting habits. However, these cultivars differ in zone composition and zone length.



Spatial modelling of a stoloniferous plant under variable conditions

The relative importance of vegetative and sexual reproduction in *Hieracium pilosella* was modelled in a gradient of soil fertility by **Winkler and Stöcklin (pp. 525–536)**. Plasticity in stolon length and clonal reproduction ensured persistence of *Hieracium* in low competition. Reproduction by seeds became important with high competition and shortage of open space.



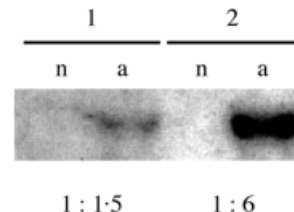
Interpreting leaf measurements

Measurements of leaf attributes such as area and mass are important in understanding relationships between plant form and function. **Roderick and Cochrane (pp. 537–542)** re-visit research published in *Annals of Botany* more than 30 years ago, but ignored until now, and show that the ratio between leaf area and leaf mass is reasonably conservative.



Cold deacclimation in oilseed rape

Freezing tolerance is affected by fluctuating temperatures during winter, progress of vernalization and daylength. **Rapacz (pp. 543–549)** shows that cold deacclimation is faster and partly irreversible when high day-temperature, lack of vernalization requirement or long days trigger an increase in elongation rate. If not, deacclimation is irreversible and its rate depends on the mean temperature.



Flooding tolerance

The resistance of four neotropical trees (*Sesbania virgata*, *Erythrina speciosa*, *Sebastiania commersoniana* and *Schizolobium parahyba*) towards oxygen deprivation determines their natural habitat zonation. **Kolb et al. (pp. 551–558)** show that key factors are successful development and establishment of seedlings, based on an appropriate adenylate energy metabolism that is sustained by ethanolic fermentation.

Continued overleaf



Seed germination in a wild-extinct plant

Low fitness values may operate in rare and endangered insular species, compromising their survival. **Rosselló and Mayol (pp. 559–562)** show that reproductive features (fertility and seed viability) are not major causes of extinction of *Lysimachia minoricensis*, a Balearic endemic whose remaining living stocks are genetically depauperate.



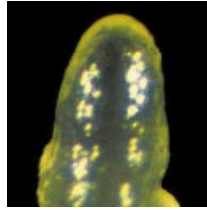
Salinity and N₂-fixation in *Cicer arietinum*

Chickpea is one of the most important grain legumes grown in semi-arid regions, but its production is vulnerable to environmental stress. Initiation of symbiotic nitrogen fixation is particularly sensitive to salinity. **Rao et al. (563–570)** find chickpea genotypes tolerant of salt-affected soil have better nodulation and support higher rates of symbiotic nitrogen fixation than sensitive genotypes.



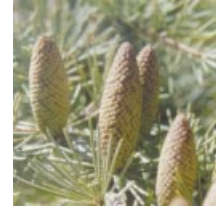
Functional andromonoecy in *Euphorbia*

The presence of staminate cyathia in *Euphorbia* is revealed as a common phenomenon by **Narbona et al. (pp. 571–577)**. These cyathia are more frequent at the first levels of the pleiochasia. Perennial species produce higher proportions of staminate cyathia than annuals. The selective forces causing this secondary sex segregation in *Euphorbia* are discussed.



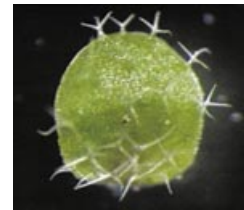
Developmental traits affecting low-temperature tolerance

Reciprocal near-isogenic lines were developed for the vernalization determining *Vrn-A1* locus producing both spring and winter lines in genetic backgrounds of a non-hardy spring wheat and a very cold-hardy winter wheat. **Limin and Fowler (pp. 579–585)** report that vernalization requirement and final leaf number influenced timing of the vegetative/reproductive transition, and were major developmental factors affecting low-temperature tolerance.



Pollen dispersal patterns in Himalayan cedar

Pollen grain traps set at strategic positions and distances from source trees show that *Cedrus deodara* pollen travels over 196 m and dispersal is strongest in a downhill direction. **Khanduri and Sharma (pp. 587–593)** propose that 190 m is the minimum isolation distance for ensuring uncontaminated seed production in seed orchards.



Leaf development in *Arabidopsis thaliana*: a thermal-time based programme

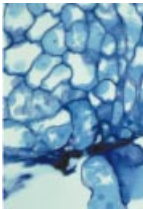
Thermal time is commonly used for modelling the development of crop species. **Granier et al. (pp. 595–694)** examine whether this method could be used in *Arabidopsis thaliana*, a non-crop species. They analyse the response to temperature of leaf initiation rate and of the development of two leaves of the rosette.

Continued overleaf



Colour banding of grasstree stems

Grasstrees are arborescent monocotyledons widespread in Australia. Removing charcoal from the persistent leafbases reveals alternating cream and brown bands corresponding to seasonal effects, and occasional black bands due to fire. **Colangelo et al. (pp. 605–611)** examine the basis for these colour changes and show that tannins in the cortex and naphthalene-derivatives in the vascular tissue are responsible.



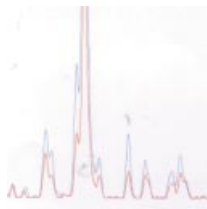
Late-acting self-incompatibility in *Eucalyptus*

Eucalypt seed orchards provide seed for plantation forestry and produce both good quality, outcrossed seed and inbred, selfed seed. **Pound et al. (pp. 613–620)** examine early stages of ovule development in self-incompatible *Eucalyptus globulus* trees following self- and cross-pollinations to identify the self-incompatibility mechanism. A method for identifying self-incompatible trees is proposed.



Whither aerenchyma?

Although widely recognized for its role in oxygen transport to submerged tissues, the cortical aerenchyma in plants that undergo secondary growth is often sloughed off, breaking the continuity between submerged and non-submerged tissues. **Stevens et al. (pp. 621–625)** show that an additional pathway for oxygen transport exists in the phellem of *Lythrum salicaria* (L.), and examine its contribution to plant performance.



Genetic resources of *Miscanthus*

Hodkinson et al. (pp. 627–636) use two DNA fingerprinting techniques to characterize *Miscanthus*, a close relative of sugarcane that has potential as a biomass crop for renewable energy production and as a source of fibre for the paper and cellulose industries. The molecular markers are used for cultivar differentiation, hybrid identification and estimation of genetic diversity.



Somatic embryogenesis in elm

The novel demonstration that embryogenic cultures and somatic embryos can be obtained from zygotic embryos of *Ulmus glabra* and *U. minor* is given by **Corredoira et al. (pp. 637–644)**. They propose a key factor for the embryogenic response to be the developmental stage of the zygotic embryo.



Fine tuning cassava somatic embryo production

A study by **Groll et al. (pp. 645–648)** reveals the importance of the concentration of Murashige and Skoog medium used to induce somatic embryos from nodular callus. An effect on desiccation tolerance is also reported.