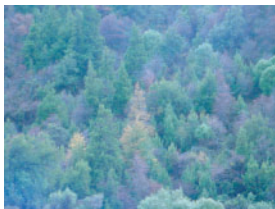


Molecular genetics of disease resistance in cereals (Botanical Briefing)

Ayliffe and Lagudah (pp. 765–773) assess the molecular basis of multiple defence strategies employed by rice, maize, wheat and barley, and outline approaches for improving disease resistance that embrace polygenic and non-host resistance mechanisms. The possibilities for utilizing the isolation of an increasing number of resistance genes (R-genes) in controlling disease are also explored.



Semi-deciduous natural hybrids of *Nothofagus* spp.

Trees with a partial leaf-shedding pattern are unusual in temperate forests. Stecconi *et al.* (pp. 775–786) show morphological and genetic evidence of the first record of hybrids between a deciduous and an evergreen species of *Nothofagus* (Nothofagaceae) found in natural stands.



Quantitative and qualitative traits revealed between diploid *Fragaria* species

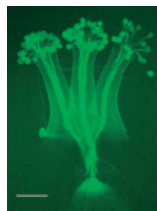
The diploid *Fragaria* are morphologically diverse, but remain relatively interfertile. Sargent *et al.* (pp. 787–796) quantify this diversity. They use QTL mapping of interspecific

populations, which helps to determine the genetic basis of these extensive heritable phenotypic differences.



Genetic variability in threatened species of *Antirrhinum*

Compared to *A. pulverulentum*, genetic variability in *A. subbaeticum* and *A. pertegasii* is shown by Mateu-Andrés (pp. 797–804) to be very low and amongst the smallest known in the genus. A striking difference is seen in the partitioning of variation as well as in levels of gene flow among conspecific populations. Strategies for the conservation of these species are proposed.



Modifier genes for self-incompatibility in buckwheat

Distylous self-incompatibility such as that of buckwheat and *Primula* is mainly controlled by the *S* supergene. Matsui *et al.* (pp. 805–809) investigated self- and cross-compatibility and inheritance of flower morphology of a self-fertile buckwheat line (Pennline 10). They show that self-fertility and flower morphology are controlled by genes outside the *S* supergene.



Bi-phasic growth patterns in rice

An apparent pause in the growth of rice crops around flowering is reported by

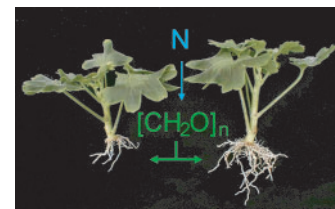
Sheehy *et al.* (pp. 811–817).

They suggest that this can be explained if both vegetative and reproductive components follow logistic growth patterns, which, together, give an overall bi-phasic pattern to crop growth. Their analysis provides insights into the growth processes of the plant and the pattern of yield formation.



Storage and seedling growth in the rain forest

Cotyledons of seedlings of *Hymenaea courbaril*, a Neotropical legume tree, are rich in xyloglucans. Their detachment (Santos and Buckeridge, pp. 819–830) halves shoot growth. Storage xyloglucan is especially critical for growth under low light and is seen to play a key role in seedling establishment on the poorly lit forest floor.



Nitrogen, carbohydrates, survival and adventitious rooting in *Pelargonium*

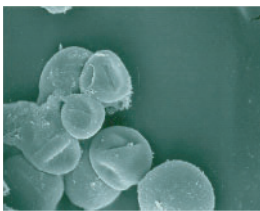
Propagation of *Pelargonium hortorum* in Central Europe involves high-light adaptation of cuttings at low-latitude production sites, and transport and rooting under low light. Druge *et al.* (pp. 831–842) show that, under such conditions, adventitious rooting is sensitive to nitrogen deficiency, but is predominantly limited by carbohydrate availability, particularly the initial sugar level in leaves.



Climate change effects on Mediterranean shrubs

Llorens et al. (pp. 843–853)

investigate the effects that near-future drier or warmer conditions could have on the growth of two co-occurring Mediterranean shrubby species (*Erica multiflora* and *Globularia alypum*). The contrasting responses found in the growth of each species, in the field, can be expected to modify their relative competitiveness and thus change species composition of Mediterranean shrublands in the long term.



Responses of soybean pollen to UV-B radiation

In six cultivars of soybean, **Koti et al. (pp. 855–864)** find that a high dose of UV-B radiation (15 kJ) reduces percentage pollen germination and tube growth by altering pollen morphology. High UV-B radiation is also shown to shrivel pollen grains, resulting in an absence of apertures and alterations to exine ornamentation.



Phytolith assemblages in grasses native to central Argentina

Phytolith reference collections are a prerequisite for accurate interpretation of soil phytolith assemblages used to help reconstruct past vegetation. **Gallego and**

Distel (pp. 865–874) describe phytolith reference collections for grasses native to central Argentina. Their results show differentiation amongst phytolith assemblages at species level and at plant functional type level.



Loss of seed dormancy varies during after-ripening in wild and cultivated rice species

Veasey et al. (pp. 875–882) present data for the loss of seed dormancy during after-ripening for the wild American *Oryza glumaepatula*, *O. latifolia*, *O. grandiglumis*, *O. alta* and the wild *O. punctata*, *O. eichingeri*, *O. rufipogon*, and two cultivated species (*O. sativa* and *O. glaberrima*).



To trip or not to trip in *Trigonella balansae*

Trigonella balansae, an annual pasture legume, does not set seed unless the flowers are tripped and protected from external vectors. **Nair et al. (pp. 883–888)** show that the stigmatic membrane is ruptured as a result of tripping, thereby facilitating pollen germination.



Stem respiration of Scots pine

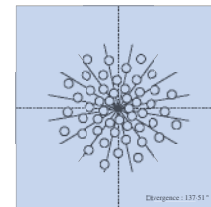
Zha et al. (pp. 889–896) show that stem respiration of Scots pine varies

diurnally, seasonally and between years, and is an important component in the annual carbon balance. The authors estimate that stem respiration contributes 9 % to total carbon loss from the ecosystem and consumes approximately 8 % of ecosystem gross primary carbon production.



Evolution of genome size in *Veronica*

Genome size and DNA C-value are reasonably constant characters of a species but can vary greatly between species. **Albach and Greilhuber (pp. 897–911)** investigate genome size evolution in the genus *Veronica*. In contrast to expectations, a correlation between low genome size with a selfing breeding system is stronger than that between low genome size and annual life history. Larger genome size is also associated with an alpine habitat.



Statistical recognition of phyllotactic patterns

An appropriate statistical method is needed to characterize the degree of order in phyllotactic mutants. **Jeune and Barabé (pp. 913–917)** adapt a method, already used in ecology, to determine, within a confidence interval, to which phyllotactic pattern (distichous or whorled, spiral, random) a given phyllotactic organization belongs.