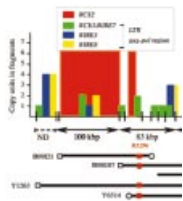
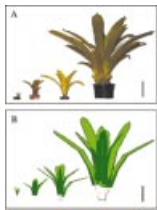


ContentSnapshots



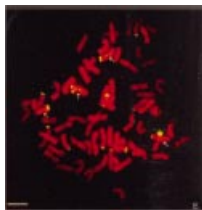
Rice genome structure, function and evolution

Over 90 % of the rice genome has been sequenced, and detailed physical mapping has revealed structural features of highly duplicated regions such as the centromere. **Kurata *et al.* (pp. 427–435)** discuss how these findings shed new light on chromosome interactions, reproductive barriers and on cereal genome evolution.



Leaf physiology or plant architecture

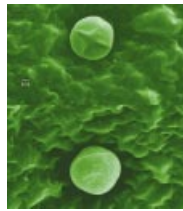
Are size-related changes in leaf photosynthetic capacity or ontogenic changes in architecture more important for plant carbon gain in a tank bromeliad? **Zotz *et al.* (pp. 437–443)** examine this question using a computer model (Y-Plant) and show that whole plant carbon gain is primarily determined by changes in leaf physiology.



Fishing for rDNA and ITS sequences aids study of Triticeae evolution

Using distribution patterns of rDNA in *Thinopyrum ponticum* and three diploid progenitors, **Li and Zhang (pp. 445–452)** conclude that during the evolution of *T. ponticum*, the position of rDNA in the genome is changeable while inherited interstitial loci are lost. Internally tran-

scribed sequences show evidence of both interlocus and intralocus evolution.



UV-B is required for normal oil gland development in basil

In *Ocimum basilicum* grown without UV-B, oil glands are incompletely developed, wrinkled and only partially filled.

Ioannidis *et al.* (pp. 453–460) show that under supplementary UV-B, volatile content increases and the glands fill with oil, as in normal development. Some of the oil sacs then break to release volatiles.



Spore storage for fern species

Fern spore viability after storage under different conditions is investigated by **Quintanilla *et al.* (pp. 461–467)**. In the markedly hygrophilous species *Culcita macrocarpa* and *Woodwardia radicans*, only wet storage at 5 or 20 °C maintains viability. However, in the three *Dryopteris* species considered, dry storage at –20, 5 or 20 °C was also effective.



Wheat ripening under drought and high temperature conditions

Where drought and high temperature occur together following anthesis, the harmful effects on grain yield are not additive. **Wardlaw (pp. 469–476)** explores the possibility that the more rapid development of the grain that occurs at high temperatures may result in a degree of drought escape.



Orchid pseudopollen and food-hairs

Some orchid genera reward insect pollinators with pseudopollen instead of nectar. Pseudopollen is formed by the fragmentation of protein-rich, multicellular hairs. **Davies *et al.* (pp. 477–484)** describe pseudopollen and food-hair diversity in *Polystachya* and assess its value as a taxonomic character.

Comparison of *Polystachya* and *Maxillaria* pseudopollen indicates that it may have arisen several times in response to similar pollinator pressures.

Tool for classical plant growth analysis v.1.1.1 Help and FAQs

Dataset: Test dataset supplied by the authors Date: 1-Jun-02

Input				Output			
day	Root	Non-leaf	Leaf	day	g	day	g
7	0.04	0	0.22	5		day 7	day 21
7	0.07	0	0.28	7		Mean Relative Growth Rate	
7	0.06	0	0.31	7		Mean	SE
7	0.06	0	0.38	10		5.266775	0.02435
7	0.03	0	0.25	4		0.09952	
7	0.06	0	0.25	5		Mean Unit Leaf Rate	
7	0.05	0	0.25	5		g / m ² / day	
21	0.9	0	18.4	402		Ebar	SE
21	0.7	0	11.4	230		13.7095	2.59538

Downloadable growth analysis calculator

Hundreds of studies in plant physiology, agronomy and evolutionary ecology have used classical plant growth analysis, but most have neglected the tedious mathematical and statistical calculations that are necessary for a truly rigorous implementation of this approach. **Hunt *et al.* (pp. 485–488)** offer a free download of a state-of-the-art spreadsheet tool which does all of the hard work when users paste in appropriate raw data.

Continued overleaf



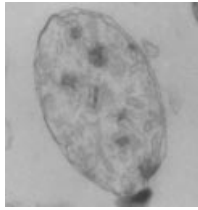
Anatomical comparison of three *Typha* species

Shoot organs of three species of cattail are examined by **McManus *et al.* (pp. 489–493)** for anatomical differences. These characteristics differentiate the three species and offer a better understanding of their habitat preferences, including the dominance of the hybrid cattail, *Typha glauca*, throughout wetlands of north-eastern North America.



Oxygen shortage and membrane injury

The effects of oxygen deficiency and energy availability on membrane stability of potato cells are various. **Rawlyer *et al.* (pp. 499–507)** demonstrate that only very slow ATP production is needed to maintain intactness. Below a threshold rate, membranes hydrolyse while re-aeration causes peroxidation by lipoxygenases. Anoxic cells are shown to form stress lipids (*N*-acylphosphatidylethanolamines), similar to those of anoxic brain and heart tissue.



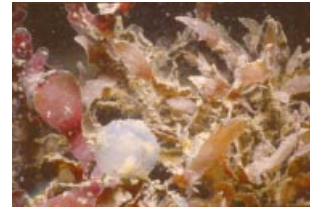
Oxygen shortage, Ca²⁺ and mitochondrial cytochrome *c*

Oxygen deprivation and high Ca²⁺ levels induce cyclosporin A-insensitive permeability transition in wheat root mitochondria. **Virolainen *et al.* (pp. 509–516)** show Ca²⁺ specificity of the process and define the mitochondrial matrix as the site of ion action. Efflux of previously accumulated Ca²⁺, cytochrome *c* release and swelling of the mitochondrial matrix are observed upon the onset of anoxia.



Plant communities at the periphery of a biodiversity hotspot in Brazil

Plant communities peripheral to the Atlantic rain forest are subjected to distinct types of seasonal stress and have lower species diversity. **Scarano (pp. 517–524)** argues that in marginal communities, rain forest canopy plants act as terrestrial nurse plants. Floristic and evolutionary links indicate strongly that conservation initiatives should focus on the vegetation mosaic rather than on the rain forest alone.



Seaweeds in the cold

Over the more than 1.4 billion years for which they have existed, seaweeds have experienced several episodes of low sea-surface temperature. However, some of the dominant large seaweeds of the colder seas today are of relatively recent evolutionary origin. **Raven *et al.* (pp. 525–536)** consider the evolutionary biogeography and ecophysiology of seaweeds that inhabit cold parts of today's ocean.



Climate change and tree lines

At high elevation the tree as a life form does not succeed as well as the dwarf shrub, as the latter experiences higher surface temperatures close to the ground. **Grace *et al.* (pp. 537–544)** discuss the potential for trees to migrate upwards, as climate warms, thereby colonizing new territory. There is already evidence of an advance of trees at high latitude and high altitude, but in some regions this is prevented by human activities.