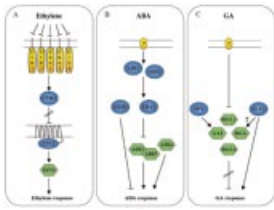


Content Snapshots



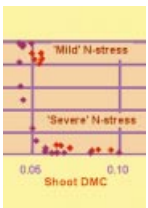
Cross talk between signal transduction pathways

Gazzarrini and McCourt (605–612) review a subset of genes in Arabidopsis that influence hormonal cross-talk with emphasis on GA, ABA and ethylene pathways. Hormones appear to interact with each other and with a variety of developmental and metabolic signals. It also appears that the actions of various hormones may converge to regulate the turnover of important regulators involved in growth and development.



Pseudovivipary at elevated pCO₂

Elevated atmospheric CO₂ may suppress photosynthetic capacity as extra carbon saturates metabolism and ties up mineral resources; this is particularly apparent when nutrients are scarce. **Pierce et al. (613–622)** demonstrate that the reproductive phase of pseudoviviparous alpine meadow grass (*Poa alpina*) is limited in the same manner as the vegetative phase, with reproductive phenology also being altered.



A dynamic model for nitrogen-stressed lettuce

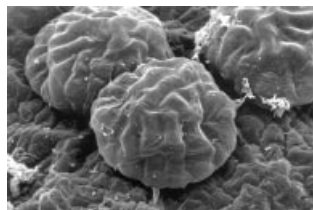
Lettuce under severe nitrogen and water stress has an extremely low nitrogen and water content. **Seginer (pp. 623–635)** presents a dynamic model with a special compartment for 'excess' carbon. This mim-

ics successfully the observed long-term and transient behaviour of the stressed crop. The response time to abrupt environmental changes is shown to increase as the relative growth rate decreases with time.



Taxonomy of the parasitic genus *Orobanche*

RAPD markers are used by **Roman et al. (pp. 637–642)** to study variation among 19 species of *Orobanche*. The pattern of interspecific variation obtained is in general agreement with previous taxonomic studies based on morphology with partition into two different sections (*Trionychon* and *Orobanche*) being confirmed. However, the dendrogram location of some species does not always fit the conventional botanical classification.



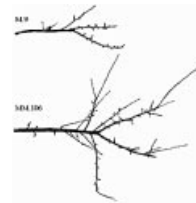
Leaf trichomes and taxonomy

Comparative analysis of leaf trichome structure and composition of surface exudates is often used to distinguish between closely related species or hybrids. **Valkama et al. (pp. 643–655)** show that structure, density and distribution of leaf glandular and non-glandular trichomes and the profiles of epicuticular flavonoids differ among Finnish birch species and thus provide a useful taxonomic tool.



Metal levels in Al-accumulating Rubiaceae

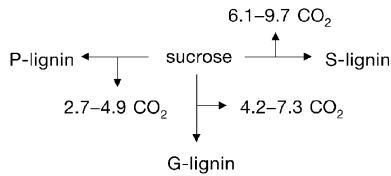
Mechanisms and patterns of Al accumulation are relevant to studies of plant systematics, physiology and ecology. **Jansen et al. (657–663)** compare exact metal concentrations in leaves of some Rubiaceae. They hypothesize that an Al-Si complex contributes to internal Al detoxification in Al accumulators, although the Si : Al mole ratio varies widely.



Application of architectural analysis to study dwarfing phenomenon in apples

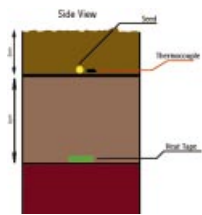
A dynamic interpretation of plant architecture can be made without long-term observation once a correlation between growth and structure is established. **Seleznova et al. (665–672)** apply architectural analysis to study effects of rootstock/interstock combinations on branch development. They show that M9 dwarfing rootstock dramatically reduces amount of neoformation in annual shoots.

Continued overleaf



Substrate requirement for lignin biosynthesis

Using methods developed by Frits Penning de Vries 30 years ago, updated with recent understanding of lignin biosynthesis and respiration, **Amthor (pp. 673-695)** calculates that only 61-77 % of carbon available from photosynthesis can be retained during lignin biosynthesis. The monomer composition of lignin has a large effect on overall efficiency of lignin biosynthesis.



Leaf appearance and temperature

Unexpectedly, heating the soil at crown depth did not increase leaf appearance rates in spring wheat. **McMaster et al. (pp. 697-705)** extend the paradigm by recognizing that cell division and growth occur over a significant vertical distance and break the phyllochron into three component processes.



Morphology and genetic diversity in sessile oak

In Italy, the population of *Quercus petraea* has been drastically reduced by two centuries of human activity. In a preliminary survey of five populations, **Bruschi et al. (pp. 707-716)** analysed both morphological traits and micro-satellite loci. Although differentiation occurs in both sets of traits, patterns of morphological traits are not coincident with microsatellite differentiation. Implications of the findings for conservation are considered.



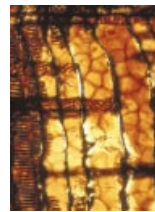
Habitat adaptation of filmy ferns

Filmy ferns are traditionally seen as rare plants of sheltered, shady, humid places. **Proctor (pp. 717-727)** shows that the two British species of *Hymenophyllum* have overlapping light-response ranges depending on habitat and season, whilst differing substantially in their levels of desiccation tolerance. Aspects of water relations and ecophysiological adaptations of filmy ferns are similar to those of bryophytes.



Seed coat structure and nutrient transport

Van Dongen et al. (pp. 729-737) relate certain anatomical features of developing pea seed coats to assimilate transport and unloading. They show that phloem-imported solutes first move symplasmically into chlorenchyma and ground parenchyma of the seed coat. They are subsequently unloaded into the apoplast and, finally, diffuse towards the embryo through liquid-filled intercellular spaces.



Ecophysiology of a fossil Carboniferous progymnosperm

Water stress commonly causes live xylem parenchyma to bulge into adjacent conducting cells. This forms tyloses that inhibit further water transport. **Scheckler and Galtier (pp. 739-747)** show that distribution of tyloses in *Prototypis* wood corresponds to recurring water stress-induced dormancy, heartwood vs. sapwood location, tracheary cell dimension, and geometry of ray parenchyma distribution.