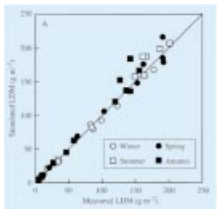
Content*Snapshots*

Floral rewards: nectar *vs.* pollen

Evolution of pollination systems within a particular group may involve novelties in the floral reward offered to pollinators. **Freitas and Sazima (pp. 311–317)** examine the pollen-flowers of two Brazilian species of violets, a genus that typically forms nectar-producing flowers. The authors discuss how natural selection might favour pollen instead of nectar as a floral reward in this group.

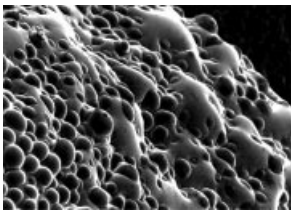


Simulation of crop leaf area development

The use of photosynthesis-driven models is hampered by difficulties in predicting the dynamics of crop leaf area development. **Lee and Heuvelink (pp. 319–327)** show that the combination of prediction of leaf dry mass increase and specific leaf area (SLA) of newly formed leaf dry mass predicts the time course of leaf area index for year-round cut chrysanthemum crops under a wide range of conditions. Leaf dry mass increase is predicted as a fraction of shoot growth rate, which depends on the stage of development. SLA is shown to be a function of light intensity, temperature and plant density.

Genetic diversity of Chinese *Primula obconica*

Genetic diversity among five populations of *Primula obconica* is assessed by **Nan *et al.* (329–333)** using inter-simple sequence repeat (ISSR) markers. Cluster analysis of 60 individuals of this species shows that there is no distinct genetic differentiation between populations from central and south-west China.



Fungicide sprays can injure the stigmatic surface during receptivity in almond flowers

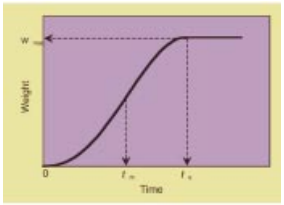
Fungicides can be detrimental to flower development, pollen function and fruit set in a number of crops. **Yi *et al.* (pp. 335–341)** show that in almond, certain fungicide sprays can have direct detrimental effects on stigma morphology and can enhance exudate production.

Tolerance of sunflecks in *Phaseolus vulgaris*

Responses of French bean plants to short simulated sunflecks are described by **Tsonev *et al.* (pp. 343–352)**. A slight protection of photosystem II from the effects of the sunfleck is reported when plants are grown at cooler temperatures (10 °C down from 20 °C). The effect of lowered oxygen concentrations suggests that photorespiration acts as a safety valve for excess energy.

Epiphytes and light flecks in the understorey

Light flecks may play an important role for carbon gain by understorey plants. **Zotz and Mikona (pp. 353–359)** test the hypothesis that epiphytes differ from terrestrial plants by giving a higher priority to water conservation. Photosynthetic induction both in the laboratory and in the field, and *in situ* carbon gain are compared with calculations based on a steady-state model.



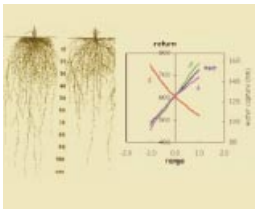
New flexible sigmoid function

Most annual crops are determinate, and their growth stops once they reach physiological maturity. Existing growth equations are not able to describe this pattern because the maximum growth is used as their upper asymptote when time goes to infinity. **Yin *et al.* (pp. 361–371)** present a new equation, 'the beta growth function', that is uniquely suitable for predicting the determinate growth pattern. Various notable features of the equation are highlighted.

Continued overleaf

Rate of cell division determines sink strength

Plants adjust their development of sink organs in response to the availability of photosynthate over a range of CO_2 and light conditions. **Chen and Setter (pp. 373–381)** conclude that potato tuber growth is modulated largely by altering the rate of cell division. This in turn is related to cambial-zone glucose and soluble-invertase in a pattern suggesting the involvement of a glucose-signalling pathway.



Modelling cereal root systems for water and nitrogen capture: towards an economic optimum

A quantitative model of wheat root systems is developed by **King *et al.* (pp. 383–390)**. The model links size and distribution of roots to the capture of water and nitrogen during grain-filling. An economic sensitivity analysis concludes that more fine roots at depth, and less proliferation in surface soil, would improve yields and profit.

Summer dormancy and flowering in a geophytic grass

In Mediterranean climatic regions, summer dormancy allows plants to survive the hot and dry season. **Ofir and Kigel (pp. 391–400)** show that along a gradient of increasing aridity, populations of *Poa bulbosa* enter dormancy earlier, exhibit more intensive flowering and have leaf traits that impart better drought resistance.