

In this issue

Information Implosion

Trends in knowledge creation

Scientific output in terms of number of papers published has been seeing an exponential growth. In looking at this amazing growth of the tree of knowledge, attention is drawn to the new branches which sprout occasionally and grow much more vigorously than the parent trunk.

A General Article on **page 1419** in this issue examines the growth of biotechnology, proteomics, synthetic biology and other new areas where the rate of growth in number of papers far exceeds the publishing rate in biology as a whole.

Policies, laws and funding often help facilitate such precipitous growth in some countries at certain times. But growth in science in general, however, is slowly becoming less national and more international, observes the General Article.

Water on Moon

Deceptive colours of apatite

In 2009, when the results from *Chandrayaan 1* started coming in, the scientific world was surprised. There was water on the moon! It is not as dry as it was presumed to be.

But how much water is there on the moon?

Scientists from the Physical Research Laboratory examined the water content in different lunar samples collected from the Apollo missions. In a Research Communication on **page 1536** in this issue, they report that the water content in apatite crystals in Apollo 15 lunar basalt 15555 is much less than the amount seen in samples of lunar volcanic glasses and inclusions that sampled much deeper regions of the moon than the lunar basalts.

Apatite is derived from a Greek word meaning 'to deceive'. It is deceptive because of the variety of colours and forms of apatite. But science sees through the deception and makes use of the colours of apatite for understanding differences in the amounts of volatiles including water,

F and Cl in the lunar interior and the role they played in the early evolution of moon.

This non-uniformity of water content makes it difficult to assess the total amount of water on the moon.

Fish Production in Kashmir

Economic threat to lake ecology

Dal Lake and Wular Lake in Kashmir harbour *Schizothorax*, a cleft-breasted fish that breeds well even in cold mountain waters. It is of academic interest to ecologists. But for the fishers, traders, hotels and houseboats who buy fish for consumers, both local and tourists, fish represents a different story.

To meet the demand for tasty fish, other fish species, especially the common carp was introduced into the lakes. Today the two lakes account for 70% of the state's total fish production.

But introduction of common carp to Kashmir lakes may have been at the cost of the local fish. The status of local fish in the lakes is showing signs of instability, point out scientists from Mumbai.

Wular Lake is the largest freshwater lake in India. But its water coverage has been decreasing rapidly. And Dal lake is under the economic pressure of tourism. Multiplicity of State and Central Government Institutions that deal with fisheries and lakes along with the departments of fisheries may need to take coordinated action to balance ecology and economics. See **page 1495**.

Weed Control

Salt in shifting cultivation

In the plains, if farmers use common salt to control weeds in their fields, the field may soon become too saline. But on slopes of mountains, most of it is washed away. Traditionally, in the shifting cultivation practiced in Nagaland, salt has been used to control weeds – especially the broad leaved ones. ICAR scientists in Nagaland studied this traditional practice and found that salt is indeed

useful to control weeds and that it actually improves the yield of upland rice.

Besides validating a traditional practice, the Research Article, on **page 1459** in this issue, provides scientific data on the soils that go through shifting cultivation with and without salt application for weed control. Though salt is not costly, the quantity to be used for optimizing benefits is important for the farmers in the region.

Gut Microbiome

Species specificity in dragonflies

There is a complex diversity of gut microflora in humans with variations modulated by food on the one hand and hormonal and immune status on the other. But are there components of microbiota that are species specific?

Scientists in NCBS, Bengaluru, took dragonflies as case study. Dragonflies are believed to be generalist predators: their diet consists of a large variety of insects. The spatial and temporal variation in prey abundance may modulate the composition of gut microflora...

They examined the gut bacterial communities of eight dragonfly species collected from four different sites in southern India. And in one of these sites, they collected samples repeatedly, in different months to assess temporal variations due to diet.

What they find is significant. The gut microbiome of dragonflies, though complex, is largely species-specific, with relatively smaller but significant impacts of sampling site and month.

Dragonflies are one of the first insects to take to air. The gut microbiome has had time to co-evolve with the insect. Comparative studies on the diversity of gut microbiomes of other insect species that evolved earlier and later than dragonflies may perhaps provide us clues on the principles of co-evolution. See **page 1513**.

K. P. Madhu
kp.madhu2000@gmail.com