In this issue

Biodiversity conservation through lac cultivation

Lac insects are economically important insects exploited for their products of commerce, viz. resin, dye and wax. These are polyphagous and have been recorded on more than 400 plant species which have varied economic, medicinal and social significance. Whether the lac insect is to be treated as a beneficial insect or a pest depends upon the relative utility of the lac and the plant it infests as well as whether the infestation is purposeful or natural. K. K. Sharma *et al.* (**page 894**) elucidated the importance of lac cultivation in conservation of associated fauna and flora and forests as well.

In the Indian context, lac insects are a source of subsidiary income to the poor lac growers, especially tribal farmers, and providing livelihood to millions. Lac provides sustained high economic returns, generates employment opportunities and has the potential for lac-based rural cottage industries. However, with increasing population, rapid urbanization and related economic development, the forest cover is shrinking, thereby threatening the very natural existence of lac insects. Several of the insect fauna associated with lac insects are species-specific (exclusive to lac ecosystem) and hence, loss of even one species of lac insect poses a danger of losing many other related fauna. Most of the lac-hosts are in forest areas and farmers resist felling of these trees for lac cultivation. Lac growers give more importance to regular income from cultivation of lac over the years to one time income from timber or fuel. Thus, lac culture not only checks environmental degradation but also conserves endangered lac insects and associated fauna and flora for posterity.

'Golden' indica rice improved and now ready to deliver?

More than three billion people live on rice. Rice as a staple food provides 40–70% calories. However, one third of the world's population and 35% of Indian population are malnourished. Bio-fortified rice can do more than what it has already contributed during the green revolution. Since the first publication of enhancement of carotenoids and particularly beta-carotene in polished rice seeds in a japonica model rice in 2001, enormous interest has been generated worldwide to improve this concept and to translate this into indica rice as 90%

of world's population consumes indica rice. The Datta group first reported the indica Golden rice in 2003 and have now reported (**page 935**) further improvement and stability of the transgenes in subsequent generations in the world's two most popular rice varieties IR64 and BR29. The highest level of total carotenoids reached 9.34 μg/l in polished seeds. This is a significant improvement of carotenoid levels in any indica rice background. As post-transgeneration effect might have attributed higher levels in the T2 generation than the original parental lines which generates further interest in metabolomics. Further challenges remain to see the bioavailability of the seed-carotenoids of rice and freedom to operate for availability and utilization of the materials in India and elsewhere.

The role of enhanced optical potential in low-energy nuclear reactions

A theoretical model is developed to explain the recently observed 'Laser stimulation of low-energy nuclear reaction (LENR) in deuterated palladium' coated with gold film. The situation is akin to that of 'Surface-enhanced Raman scattering'. The model envisages the existence of phonon-assisted D^-–D^+ entities within defects at the surface regions of a (PdD_x)–Au system. Enhancement of the optical potential occurs due to the resonance excitation of surface modes (e.g. plasmons or polaritons) produced by laser excitation. It is found that the optical potential can vary as $(\lambda/L)_n$, where λ is the excitation wavelength, L is the interparticle spacing, and $n = 2$ or 3. The electromagnetic enhancement (8 to 15 orders of magnitude) can circumvent the Gamow factor, thus facilitating LENR in the solid matrix in question. The calculated values are in agreement with experimental results. See **page 907**.