

## In this issue

### Shifting agriculture

#### *Eco-technologies and economics*

Slash and burn agriculture is an ancient technique, practiced for more than ten thousand years. Such shifting agriculture is still practiced in some parts of Assam, Manipur, Meghalaya, Mizoram and Tripura. Jhum cultivation, as it is now called, has raised environmental concerns in the recent past. Some have defended the practice, a livelihood for many, and have pointed out that, if there are enough fallow periods between re-using the same plots, the practice is useful to rejuvenate forests.

While controversy continues, scientists from the G. B. Pant Institute of Himalayan Environment and Development joined hands with 7 NGOs for participatory action research. They trained thousands of farmers in 49 villages spread over 12 development blocks in 8 districts of the North East, to use 15 different eco-technologies – while continuing to practice shifting agriculture. The sample population covered 11 distinct tribal communities. Most were marginal farmers.

In a General Article on **page 1929** they report that more than 1500 households have adopted one or more of these eco-technologies. While there were a large number of takers for the use of trellises, legume intercropping and bio-composting, some farmers even started vermicomposting and bio-briquetting as entrepreneurial ventures.

The study demonstrates that it is possible to improve livelihoods while reducing and mitigating environmental problems. Large scale efforts at the transfer of low-cost eco-technologies to upland farmers will improve crop production, say the authors.

### Received, Revised, Published

#### *Reviving the vitality of journals*

After working hard for years and struggling harder to write a paper for a reputed journal, scientists heave a sigh of relief when it is at last dispatched for publication. Then comes the waiting: a peer review process takes time.

After the to-and-fro between the authors, editors and peer reviewers, after

revising and perhaps redoing some experiments, it is finally accepted. Scientists heave another sigh of relief. Then comes more waiting. A good journal gets a large number of submissions. And quite a few are worth accepting. So there is a queue. Often the policy is first come, first published. Depending on the manuscript and the journal, it may take a few months to about two years from submission to acceptance to publishing on the Net to actual publication in print.

These long delays influence the authors' decision when choosing a journal for publication. It affects their career, especially if they are working on a highly effervescent subject area. So it is worthwhile for journals to occasionally revise workflow and smoothen out the processes in the editorial and technical departments.

In a General Article on **page 1924** in this issue, K. C. Garg, CSIR-NISTADS, makes an assessment of the delays in 13 out of the 18 publications brought out by CSIR-NISCAI. The data provided is useful for decision making and for taking appropriate action to reduce publication delays.

It is interesting to note that this General Article was received in September and is published on 25 December.

### Archaeological Mystery

#### *Solution from oceanography*

Dholavira, in Gujarat, was excavated only about 3 decades ago. Another site that shows signs of a four thousand year old civilization! Unlike the other sites of the Indus Valley Civilization – Harappa and Lothal – Dholavira has a much thicker protective wall. The protective walls of Harappa and Lothal are understandable: they were prone to floods. But Dholavira did not need protection from floods. In fact, Dholavira shows higher refinement in managing the water from two minor rivers, showing that the fear of floods did not necessitate such thick walls. So why did they make a 15 meter thick wall – much thicker than the Great Wall of China?

Since this was before the days of guns and cannons, it could not also be

a protection from enemies, reasons a Research Communication on **page 2040** in this issue. The authors, from the National Institute of Oceanography, Goa, provide evidence which points to a fear of tsunamis and tidal waves as a possible reason for the investment of energy and materials in building such huge structures.

Interestingly, these protective walls, built a few thousand years ago, are similar to the dimensions of modern structures for coastal hazard management in Japan and the US, say scientists.

### Emancipation from e-waste

India is estimated to produce a few hundred tonnes of e-waste every year. The electronic and digital revolutions will spew out more in the coming years. Cathode ray tubes, PCBs, electronic circuits, dead batteries, plastics, metals... They just accumulate in junk yards. On the one hand, there are precious metals that can be harvested, while, on the other, there is the threat of toxic chemicals leaching from this junk.

In this issue, Amrik Bhattacharya and S. K. Khare from the Indian Institute of Technology, Delhi, provide us with a comprehensive review of emerging technologies and techniques that can sustainably mitigate toxic outcomes.

Besides physical and chemical methods, there are enzymatic detoxification and mineralization techniques. The use of microorganisms and plants can also help mitigating some of the problems. By combining the various options provided in the Review Article on **page 1946**, a commercially viable solution may also emerge.

It is said of science that when it solves a problem, new questions arise. This seems to be true of technology too. Biotechnology and other new technologies will have to be devised to overcome problems created by Information and Communication Technologies.

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