

In this issue

Drip, Sprinkle, Save

More crop per drop

In the fifteen years from 1995 to 2010, the number of wells in use grew by about three million in India. Nearly half of them were tube wells. And nearly a quarter had electric pumps attached. So the flick of a switch is all that is required to irrigate crops and for industrial uses.

Unsustainable overexploitation of groundwater is only a part of the problem, points out a General Article in this issue. Flooding the fields with water washes off and leaches costly fertilisers. It is more sensible to use micro-irrigation. More crop per drop, more bang for the bucks spent.

But though drip irrigation and sprinkler irrigation technologies are well developed, why are they not being adopted widely? What can be done to popularise the use of more efficient and sustainable solutions in the water and irrigation sector in the country, inquire scientists from ICAR-CIFT.

Read on from **page 1163**.

Well-kept Lawns

Estimating nitrous oxide emissions

Well-kept lawns are aesthetically pleasing and are considered environmentally benign. Lawns are an important part of urban green spaces, providing essential ecosystem services. Lawns can regenerate oxygen, sequester carbon, provide recreation and prevent soil erosion. However, turf that is regularly irrigated and periodically supplied with nitrogen fertilisers becomes a source of the greenhouse gas, nitrous oxide.

Since studies on nitrous oxide emissions from lawns are few and report varied results, there was a need to understand this phenomenon better by examining these studies closely. Researchers from the National Institute of Advanced Studies and the Indian Institute of Management, Bangalore present the first meta-analysis on nitrous oxide emissions from fertilised lawns, in a Research Article in this issue.

Individuals who manage lawns in homes, institutions and parks, as well as decision-makers at the forefront of urban landscape planning and policy may like to read the article on **page 1219**.

Academic Capitalism

Commercialisation of science

Science as an activity undertaken to satisfy one's curiosity to science as a method to solve problems that are socially relevant to science as a tool to produce goods and services for the market-oriented economy – the outlook on science has been changing rapidly. Omkar Nadh from the Institute for Social and Economic Change, Bengaluru examines the legal and regulatory changes that shifted the perspectives on life sciences research in the US, to come to grips with the changes that are expected in India, where the commodification of knowledge is closely following the route taken by the US earlier.

Unlike research in strategic areas such as defence, space, nuclear energy, etc. biomedical research has direct benefit to pharmaceutical industries. Researching and developing new drugs and medical equipment is expensive and returns on investments unpredictable.

Patents may protect intellectual assets only for a short duration, which makes it difficult to get the money invested back let alone to make profits. It is less costly to fund projects in universities and research organisations that are already funded by the Government.

And if any new research shows commercial potential, there is venture capital waiting in the wings so that researchers can become entrepreneurs. The acquisition of biomedical start-ups or mergers work out to be less cumbersome, and often more profitable than investing in research and development.

Read more on the Research Communication on **page 1296** in this issue.

Song of the Sparrow

Selecting sites for survival

Delhi had a large number of sparrows a few decades ago. During early summer, people had to take efforts to keep them from nesting inside houses. And then, overnight it would seem, sparrows almost disappeared. Unlike the disappearance of vultures from avenue trees in Delhi, the absence of sparrows did not get adequate media attention. But now, they are slowly reappearing all over, providing researchers an opportunity 'to study the habitat variables influencing the selection of nest sites, so that artificial nest boxes can be installed in selected sites'.

Researchers divided East Delhi into one kilometre grids and conducted transects to identify the best locations based on the natural preferences of sparrows. See the Research Communication on **page 1304** for details.

Businessman, Scientist, Diplomat

Several shades of Sarabhai

How does one describe a visionary who set the stage for India's space programme and nucleated India's nuclear energy programme? What made Vikram Sarabhai tick? Was it just the proverbial silver spoon in the mouth? Was it close contact with Nobel Prize winners in his youth? A fascination for the arts in his mature years? From where did he get his leadership qualities, his scholarship in the sciences, his managerial skills, administrative acumen and finesse with finances? And how could he treat prime ministers and peons with equal grace, without pomp and show?

One century after the birth of Vikram Sarabhai, people who lived and worked with him reminisce and review an important chapter in Indian history. Turn to the special section on Sarabhai on **page 1173** now.

K. P. Madhu

Science Writing Consultant

scienceandmediaworkshops@gmail.com