In this issue

Agreement on Agriculture

Factors in research productivity

The Green and White Revolutions have amply demonstrated that scientific and technological inputs into agriculture can increase productivity and assure food security. And India has built up many laboratories for this purpose. Yet, why is it that most of the research papers published by these institutions go un-cited?

The performance of institutions with a mandate of research in agriculture, including forestry, fisheries and animal husbandry, varies from highly productive to poor. Scientists at the ICAR-Indian Agricultural Research Institute examine the factors that go into quality research as per the perceptions of scientists working in both types of institutions. And find that there is a fair amount of agreement between scientists.

In a General Article in this issue, they describe the way they started with the 133 variables mentioned in previous literature and, by a process of elimination and selection, homed in on 26 variables that influence scientific output. They organized eleven of these variables under five factors that determine organizational productivity. The remaining fifteen are grouped under six factors that determine the research productivity of agricultural scientists. Scientists, as well as leaders, managers and bureaucrats of science, may need to read the article on **page 252**.

Patents and Partnerships

Roadmap for ISRO

The Indian Space Research Organization had its humble beginnings in 1962. The first satellite built by ISRO, Aryabhata, was launched by the erstwhile Soviet Union in 1975. But today it stands among the leaders in space technology.

Researchers at the Rajiv Gandhi School of Intellectual Property Law Kharagpur and the CSIR-National Institute of Science Communication and Information Resources, New Delhi, now examine ISRO's performance 'through the prism of the patents', tracing trends in ISRO's patents since 1971. They note that it has shown a climbing rate over four decades. They identify the most productive satellite centres from among more than 23 laboratories and field stations extended across the country.

In a General Article on **page 236** in this issue, they delve deeper into the categories and individual patents, to find patterns. While ISRO has contributed to the nation beyond technologies for space, and many of their patents have social and economic implications, the potential of these patents cannot fully be explored until ISRO is ready to adopt open innovation as a strategic platform to explore and exploit the commercial, economic and political realities in this era of globalization.

Noni Juice for Stress

Protecting myelin sheath

Quite a few ethnopharmacological studies have demonstrated the antioxidant activity of noni juice from the fruits of *Morinda citrifolia* both *in vitro* and *in vivo*. The juice is promoted as a panacea for lifestyle diseases.

Now in a Research Article on **page 295** in this issue, scientists at the University of Madras show how noni juice counteracts the demyelination that normally happens in rat brains in response to immobilization stress. According to the scientists, biochemical, behavioural and neurotransmitter assessments demonstrate that noni juice could significantly reduce stress-induced health concerns.

Biology for Archaeologists

Life on tombstones

Life on the earth is tenacious. Each nook and corner which provides even some modicum of resources becomes an ecological niche. Millions of years of evolution go unhindered by the emergence of a few thousand years of human history.

The Institute for the Protection of Cultural Monuments in Serbia teamed up with biologists from the University of Belgrade to examine the biocolonization of medieval tombstones. Mramorje, located on the banks of the River Drina, has about 200 well preserved tombstones. Another archaeological site, Rastište, has another 38. A large enough sample size to study.

By identifying all the biodeteriogens in the samples, researchers are able to reconstruct ecological succession on tombstones. Starting with cyanobacteria and algae, to fungi, lichens and mosses, the tombstones are colonized successively.

The Research Article on **page 304**, introduces some basic biology that archaeologists need to learn in order to protect such tombstones – tombstones that are in the UNESCO World Heritage List – from biodeteriogens.

Deserted Villages

Finding faults in the desert

Around the ancient town Jaisalmer in the Thar Desert, there are some 84 villages which now lie in ruins. They belonged to the Paliwal community who lived there till the late 13th century.

Why were these villages deserted? Rows and rows of roofless houses, similar to those in the remains of Harappan cities, lying unoccupied for about 190 years or more: what caused this? How did the mass destruction of these villages happen?

A citizen scientist collaborated with scientists from the Mohanlal Sukhadia University to find an answer. The drainage disorganization in the form of abrupt changes in the course of straight-running, but ephemeral streams in the area was the first clue. Perhaps it is an earthquake that devastated the villages?

Researchers compiled available data on faults, lineaments and earthquake epicentres on a map. The map showed clustering of the Paliwal villages not only close to active faults, but also close to plotted epicentres.

A Research Communication on **page 402**, not only presents evidence for the hypothesis based on present-day geomorphic patterns, but also suggests that the area around Jaisalmer should be considered a seismically susceptible belt because of these active faults. Urban development in the area should pay heed to this word of caution.

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