

In this issue

Mapping Himalayan Landslides

Using terrestrial laser scanner

The light detection and ranging technology, LiDAR, sends out pulses of light. From the time taken for the light to get reflected back and get detected, the distances to objects can be calculated. The data can be used to compute a three-dimensional image of scenes far away.

Aircraft-borne LiDARs have been used to create 3-D representations of the earth's surface. They can also be used from fixed points on the earth to get a detailed digital representation of the topography of mountain slopes which can give us clues about the risk of landslides. Datasets from repeated laser scanning can help quantify volumes and ground displacement changes for monitoring high-risk slopes.

A Review Article in this issue provides an account of the topographic survey of 15 landslides that occurred in Uttarakhand, Jammu and Kashmir, Sikkim and Nagaland in the last few years. The authors, from the Geohazards Research and Management Centre, Geological Survey of India, claim that the technology can revolutionise hazard assessment in hilly terrains, especially along mountain roads and habitations in hilly terrains. Read more on **page 844** for a comprehensive and in-depth review of the terrestrial LiDAR technique.

Cotton in Vertisols

Subsoiling and crop rotation

Though India has the first place in acreage under cotton cultivation, productivity is lower than the world average. This could be because of the soils, reasoned researchers at ICAR-CICR. Conventional tillage, especially when it is done under wet conditions, tends to compact the soil. The black cotton

soils where cotton is grown in India are vertisols, soils with more than 50% clay content. Such soils also harden and get compacted. This makes it difficult for the cotton roots to grow deeper to access water and nutrients. This, in turn, impacts shoot growth and plant productivity.

The researchers came up with two types of potential solutions: subsoiling where the compacted soil is broken by non-inversion tillage and crop rotation. At their Panjari Farm at Nagpur, they tried four types of practices – shallow and deep subsoiling as well as crop rotation with pigeon pea and radish – to grow the *Bt* cotton hybrid, Ajit 155 BGII.

In a Research Article on **page 874** in this issue, they provide evidence to show that farmers could use subsoiling and, if that turns out to be too costly, crop rotation as a means to improve the growth of cotton.

Early Iron Age in India

Plant economy

On the left bank of the Chorkhambara river, in Gondia district, four mounds signalled ancient habitations. About a decade ago, two mounds were excavated to unearth early iron age settlements. Radio carbon dating showed that the populations there thrived about 3400 years ago. How did those people subsist? What was their economy like?

The flora extant around the now famous Malli archaeological site may provide some clues. So researchers did a survey of the flora. But the flora in the area would have changed in the last few thousand years. To get more details, the researchers collected 79 samples from cultural levels of four trenches in the two excavated mounds. The samples were processed to recover 4174 charred plant remains represent-

ing 29 taxa. Then came the arduous process of identifying the cereals, pulses and other plant microremains.

What did people who lived there more than 3000 years ago eat? To find out, turn to the Research Article on **page 907** in this issue.

Dugongs in the Gulf of Kachchh

Call for conservation

Dugong dugon is the only species in its genus. Dugongs are cousins of manatees, with similar plump bodies. The marine mammal feeds on sea grasses near the coasts. It was hunted to almost extinction till protection and conservation efforts started in various parts of the world.

In the Gulf of Kachchh, it is estimated that only about 15 individuals remain. Since the population comes into conflict with fishing and other human activities, fisher folk in the region were sensitised to the issue by wildlife researchers. That is how the researchers came to know about two dead dugongs that surfaced on the beaches there – one a male and the other, a female.

The researchers lost no time to rush to the location to examine the carcasses, to study the causes of death as well as the feeding habits of dugongs, based on stomach contents – a rare opportunity. The post-mortem findings suggest that both dugongs may have died because of human activities in the Gulf of Kachchh. Besides the normal diet of these vegetarian mammals, the stomach contents had nylon fibres also.

The Research Article on **page 919** is a call for the protection and conservation of the depleting dugong populations in the Gulf of Kachchh, the Gulf of Mannar and the Andaman Nicobar.

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