In this issue

Saccharum Strategies

Crop improvement in sugarcane

Sugarcane plantations start with sett cuttings. Though under certain conditions sugarcane does flower, farmers dislike the phenomenon since it indicates that the plant has reduced the production and storage of sugar. But scientists love it: flowering and seeding of sugarcane have been extremely useful for sugarcane improvement through breeding programmes.

Traditionally, scientists acknowledge six different species of *Saccharum*. Interestingly, the plants in the same species may contain a variable number of chromosomes. Yet they can interbreed within the species. What is more enchanting is that they can be made to interbreed with the other members of the genus. This property has allowed creation of even more hybrid varieties that are tolerant to insect pests and other stressors.

Now, in a Review Article on **page 475** of this issue, scientists in the ICAR-Indian Institute of Sugarcane Research, Lucknow, review the path taken so far for crop improvement and suggest the next step: use of germplasm of *Saccharum* and related genera.

The new techniques in biotechnology will allow further mixing of traits from related genera, yielding higher yielding varieties that tolerate even wider sets of habitats stressors.

Blackbuck in Vallanadu

Bucking conservation measures

Vallanadu Blackbuck Sanctuary was established in the late eighties, to protect the dwindling population of *Antilope cervicapra.* Blackbuck was distributed in most parts of India where cheetahs and other predators kept their population in check till human population exploded. In the Tirunelveli and Thoothukudi districts of Tamil Nadu, human habitations, roads and infrastructural development encroached upon grasslands that do not support agriculture, pushing the blackbuck into the confines of a protected area.

Scientists from the Ashoka Trust for Research in Ecology and the Environment, Bengaluru, examined the occupancy of blackbuck inside and outside the Vallanadu sanctuary, dividing the area into half kilometre grids and then walked trails in each cell that could possibly be used by blackbuck. Since a part of the protected area is not conducive to blackbuck because of steep elevations, dense forest or lack of water, and since tree plantations in the protected area reduced the habitat within the sanctuary, blackbucks have, for some time now, spilled over to the surrounding areas, where availability of suitable habitat, food and water are more assured. In fact, blackbucks are found many kilometres away from the sanctuary, in human dominated land.

The Research Article on **page 543** in this issue suggests that shifting the focus from the narrow perspective of protecting a single species, to a more comprehensive approach that includes the habitat, ecology and biodiversity of the area, may be more useful in the conservation of the blackbuck.

Wind Energy

Sustainability in the future

As of now India has close to 27 GW installed capacity of grid connected power. And plans are afoot to increase it to 60 GW in the next 6 years. The plan is practicable. It will be another big boost for the renewable energy sector. But what one forgets is that, though wind energy is clean energy, wind turbines produce noise pollution. Besides the wind turbine noise, there is the lapping, swishing and whistling sounds that can annoy people nearby. So before setting up new wind farms, we should be able to predict the nuisance value to local communities, to avoid confrontations later, for sustainability.

There are differences between the noise made by different models of wind turbines. So researchers from Chennai examined three different models, with capacities of 200 kW, 600 kW and 2 MW power generation installed by the National Institute of Wind Energy in Kayathar, Tuticorin district, Tamil Nadu. In a Research Article on **page 492** in this issue they present the methods and protocols that used for noise measurements under different wind speeds and at different distances and directions from each source.

The scientists cross checked the experimentally determined data with the computational models. And they find that the experimental and modelled results are in good agreement. Thus, we have good enough tools now, to forecast the noise that will be generated in future installations. If you are even vaguely interested in the power sector, you may like to bookmark page 492.

Permafrost in the Himalayas

First map is of Kullu district

Very low temperatures can freeze the ground and the bedrock. If the frozen condition sustains for more than two years it is called permafrost, a condition seen at the poles and at high altitudes, as in the Himalayas. Besides water locked up in the glaciers of the Himalayas, the water in the ground can freeze and stop flowing. But if the climate changes and becomes warmer, this water may also start flowing, upsetting our calculations about water in the northern part of the subcontinent. It will have a major impact on the ecology of the region. So how much permafrost is there in the Himalayas?

To tackle this problem, Indian scientists collaborated with Swiss scientists. The techniques used in locating permafrost regions in the Alps come in handy to address the problem. Using topographic and climatic principles, numerical modelling and sampling of permafrost indicators, they have succeeded in producing the first map of permafrost distribution in the Kullu district, Himachal Pradesh.

A Research Communication on **page 550** in this issue presents the methods and findings. Let us hope that the work will be extended to cover the other high altitude districts of the Himalayas.

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