

## In this issue

### Higher Education Institutions

#### *Instability of India Ranking*

Indian higher education has grown rapidly in recent decades to about a thousand universities, nearly 40,000 colleges and more than 10,000 other institutions. Only about 30 figure in the global ranking of higher education institutions. A much-needed national ranking system was put in place in 2015, to evaluate institutions around five themes. Indices and measures were developed to assess each and weights were attributed to create a composite rank for all higher education institutions. The processes for data collection and rank calculation are, by now, streamlined.

In a General Article in this issue, Marisha from BHU, Varanasi analyses the uncertainty and sensitivity of the ranking. How reliable is the ranking? Why is it that, except for the top 10 or 15 ranks, the ranking becomes unstable? Is the uncertainty in lower ranks due to methodological errors?

She repeated the analysis considering only the top 100 engineering colleges. The pattern of instability of ranking at lower ranks was repeated here too.

There is a need for a complete and systematic review of indicators and sub-indicators, and the weighting scheme as well as the aggregation rule used, to develop a more reliable and stable ranking of higher education institutions, she points out. Turn to **page 1144** for more.

### Adaptive Cluster Sampling

#### *Controlling COVID-19*

The recent spike in COVID-19 cases has started straining the public health system again. While vaccines are available, breaking the virus's transmission chain remains an important step to reduce the rising overload on health services due to COVID-19.

Identifying and isolating individuals is the way to go but testing kits are limited. And the testing strategy must suit the Indian context where a large population is asymptotic.

In a Research Article in this issue, Girish Chandra and collaborators propose a testing protocol based on adaptive cluster sampling. This method is different from others in the way it selects the individuals. In this case, those who tested positive for COVID-19. Then, based on contact patterns, the sampling snowballs the cluster of population till there is no positive case in the population.

Adaptive cluster sampling has shown good results in districts in Uttarakhand and Kerala. For more details on adaptive testing for COVID-19 for optimising the use of test kits, turn to **page 1202**.

### Thunderstorm and Lightning

#### *Nowcasting in Jharkhand*

Due to its peculiar geographic and geological characteristics, Jharkhand has more than a fair share of thunderstorms and lightning. And deaths due to lightning strikes are high. Researchers from the IMD have now tested a warning system for thunderstorms and lightning. The warning goes out as SMS three hours in advance for the benefit of disaster management teams and administrators. A more refined SMS warning is sent, an hour earlier, to people at the location.

In a Research Article on **page 1194** in this issue, they describe the methods used for testing and implementing the system. Their strategy of combining and telescoping the use of different technologies can be adapted for warning systems in other areas prone to meteorological disasters.

### Personal Protection

#### *Persuasion during pandemic*

Health care workers are constantly confronting viruses, bacteria and other microbes. Besides being exposed to the threat of infections, they can also inadvertently spread infections from one patient to another. To protect against infections and reduce chances of hospital-acquired infections among patients, wearing masks, gloves, medical gowns, etc. has become common

practice. In a Review Article in this issue, engineers from the Indian Institute of Science, Bengaluru examine the evolution of such protective gear and innovations in the materials used.

While pointing out limitations in existing protective gear, the authors highlight recent research on new materials that have potential uses, not only for protection, but also to deactivate and even kill microbes. They stress the need for research and development for more effective and cheaper reusable protective gear and persuade scientists to use the pressure of the pandemic as platform to launch new products. For some quick pointers to directions that can be taken, read on from **page 1169**.

### Sandalwood Matchmaking

#### *Made in roots*

The economic benefits of sandalwood tempt farmers to go in for large scale plantations. However, growing this tree is tricky business. Sandalwood being a hemi-root parasitic plant depends on other plants for mineral nutrients and water. Hence, sandalwood roots form a network with several host plants around them for survival. Choosing the right host plants for interplanting is crucial for the success of sandalwood plantations.

A Review Article in this issue explains parasitism ecology of sandalwood right from germination to establishment. Perennial, slow growing, deep rooted trees with sparse canopy and preferably leguminous host plants, sustains the growth of sandalwood. Hence, choosing the best host plants and interplanting with adequate host-parasite ratio as well as with best silvicultural practices may yield plentiful profits in the long run. Interested stakeholders can turn to **page 1184** to explore practical strategies to maximize sandalwood growth.

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