In this issue

Ayurvedic Biology
Tradition meets modernity

Ayurveda, as a medical practice, depends on the treatises of Charaka and Sushruta as well as innumerable commentaries written on them. But, as a field for creating new knowledge, it has not done as well till recently. While most research on Ayurveda attempts to justify the knowledge of the ancients, it rarely questions the assumptions or the theoretical or conceptual underpinnings to revise our understanding, as modern science, which focuses more on refutation than on corroboration. But the field is about to undergo some revolutionary changes.

A General Article in this issue points out the possibility of redefining some of the vaguely defined concepts of Ayurveda more rigorously, in terms of the more easily measurable quantities of modern biology. Using the modern tools of genetics, biochemistry, microbiology, nanotechnology, etc., research in Ayurveda can take a new turn. The article spells out seven dimensions of the new approach of Ayurvedic biology.

Integrating Ayurveda into modern medical practice would be spearheaded by ayur-genomics. The pharmacology of medicinal plants, the evaluation of regenerative medicine in Ayurveda in terms of metabolic pathways, reigniting drug discovery research in Ayurveda using *in vitro*, *in vivo*, and clinical trials are other important dimensions. The reinterpretation of the concepts of prakriti-dosha in ayurvedic dietetics and revising disease classification to facilitate advancements in personalised medicine are also important dimensions that will take research in Ayurvedic biology to new levels.

For details, flip to **page 251**.

Medicinal and Aromatic plants
Potential source of bioherbicides

Many weeds that adversely affect crop production have started showing resistance against synthetic herbicides. Thankfully, a new set of herbicides from essential oils or their derivatives have started appearing in the market. So the time is now ripe to take stock of the potential of aromatic and medicinal plants for weed control. In this issue, Pooja *et al.* present a review on the topic.

The ability of some plants to suppress the growth of others is well recognised. Such allelopathic control on populations of other plant species is wielded via secondary metabolites. The Review Article points out that, unlike chemically synthesised weedicides, these natural compounds do not accumulate and pollute the environment. The authors take the examples of some of the well known genera of aromatic and medicinal plants that could play a role in weed control, provide pointers for the types of secondary metabolites that may play roles in allelopathic weed control and suggest possible mechanisms through which these secondary metabolites may act.

Read the invitation to join a fertile field of research that impacts agricultural productivity on **page 258**.

Kerala Bird Atlas
A citizen-science project

Bird watching is becoming a popular pastime. Leveraging on this, a team from the Kerala Agricultural University initiated a citizen science project. Another citizen science project, eBird, had the potential for some inbuilt biases because it lacks a systematic effort. The team held many meetings and workshops to chart out a course to overcome the problems.

Kerala was divided into grids to reduce spatial biases. Each grid was divided into four quadrants. Each quadrant was subdivided into nine sub-cells which could easily be covered on foot. And one sub-cell in each quadrant was surveyed by a team consisting of at least one expert, twice a year, in the wet and dry seasons, to reduce temporal biases. For 15 minutes, the volunteers recorded the presence of birds by sight or sound using a checklist. The checklists from all four quadrants were uploaded to e-Bird.

From 2015 to 2020, an enormous amount of data was thus collected. A Research Article in this issue provides an analysis of the data and the trials and tribulations encountered in this mega citizen science project.

For lessons to be learned by bird enthusiasts in other states of India, and for insights into the successful execution of citizen science projects, turn to **page 298** in this issue.

Rumen Methane Emission
Feed mixed with tree leaves

Methane emission by ruminants contributes to atmospheric greenhouse gases. There is some evidence that including tree leaves in the feed can help reduce methane emission. But which leaves are better for the purpose?

Researchers from two ICAR institutions examined leaves from nine most common trees used for agroforestry in Arunachal Pradesh. They mixed the powdered leaves with hay in a 2 : 3 ratio as feed for animals and did *in vitro* studies of the rumen liquor. Besides the methane produced, they also evaluated the total volatile fatty acids, various enzymes involved in digestion, energy content, dry matter digestibility, protozoal count...

Berberis aristata and *Symplocos cratagoides* showed best results for most of the factors checked. Adding *Berberis aristata* and *Ligustrum myrsinites* leaves showed maximum reduction of total protozoal count.

For interesting insights on the relationships between the metabolomics of leaves and the fate of the bolus that animals swallow, turn to the Research Communication on **page 322** in this issue.

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