

In this issue

Research on Organic Farming

Trends in India

Organic farming shuns the use of chemical fertilisers and pesticides. External inputs are reduced to a minimum but productivity is sustained by fertilisers of organic origin such as compost, green manure and bone meal. Some have even started leveraging on microbes to improve productivity. The management practices focus on enhancing biodiversity, biological cycles, and the biological activity of soil to promote agroecosystem health.

To promote organic farming, a programme, *Bharatiya Prakritik Krishi Paddhati*, has been launched by the Central Government as a sub-mission under *Paramparagat Krishi Vikas Yojana*. The aim is to cover 4 lakh hectares under natural farming with an outlay of nearly five million rupees. To support this programme, research is needed for evidence-based action in agricultural fields, especially since organic farming practices need to be locally adapted.

What is the contribution of Indian researchers in the field of organic farming in the last two decades? Which are the top institutions with maximum publications, who are the researchers who have contributed? What type of collaborations do they have nationally and internationally? Which are the top journals which publish research on natural farming? What magnitude of citations have the contributions garnered?

For answers to such questions and more, read the General Article on **page 483** in this issue.

Impact of Light Pollution

On humans and environment

Electric lights have almost eliminated the experience of dark nights for most of us today. Though electric lights have led to rapid human development across the world, the technological marvel of controlling light with the flick of a

switch has dark implications. Constant exposure to light disrupts the natural circadian, lunar and seasonal rhythms of biological systems. It not only impacts the behaviour of insects, birds and animals and the phenology of plants but also has detrimental effects on human health.

Light influences melatonin content in the pineal gland, which is central to the regulation of the human hormone system. Constant light exposure leads to sleep disturbance, insomnia, fatigue and reduced productivity; it increases the risk of developing depression, anxiety and other mood disorders. High levels of light can even increase the chances of certain cancers.

It is not merely the intensity of light, but also the composition of the spectrum that matters. The incandescent bulb, fluorescent lights, halogen lamps and LED lights differ from each other in their spectral composition, points out a Review Article on **page 490** in this issue. Because of their phenomenal energy efficiency, LED lights are now replacing most other types. Research on the variability of the effects of different light frequencies is yet to shed light on the problem of light pollution.

It is not easy to escape light pollution – the light reflected by atmospheric particles and clouds envelops towns and cities today. So mitigating the problem would require not only individual action, but also community and city level collaborations.

Insect-repellent Food Packaging

Film incorporating thymol

The rice weevil, *Sitophilus oryzae*, loves cereals. The insect's mouthparts are capable of chewing through and damaging the packing of cereals. Besides exposing the packed food to the environment and thereby increasing the risk of food spoilage, the creatures proliferate and consume packed food meant for humans.

Researchers in Malaysia have now come up with a simple solution to the

problem: incorporate thymol, a secondary metabolite of the thyme species, into packaging material. They incorporated thymol of various concentrations into a packaging film made of low-density polyethylene-based film with ethylene vinyl acetate as a binder. Even incorporating thymol at 0.5% showed a repelling action towards the pest and increasing thymol to 6% led to significant mortality of the insects. The tensile strength of the film was highest when thymol was at 4%.

Readers associated with food packaging industries may like to flip to **page 551** in this issue to read the Research Article that provides all the details.

Apple Crop in Himachal

A marketing analysis

The hills of Himachal Pradesh are ideal for growing apples and the Horticulture Department of the state has been encouraging the cultivation of high-yielding apple varieties and high density apple plantations. So now, nearly one-fifth of Indian apples are produced there.

Since apples are perishable items, the harvest has to be sold to consumers at the earliest in an efficient manner. So, over time, a system for picking, grading, packing and transportation has evolved, consisting of pre-harvest contractors, commission agents, wholesalers and retailers.

A Research Article in this issue investigates the processes, the roles of the actors involved and their impact on profit for farmers and cost to consumers. Optimising the number of intermediaries helps improve marketing efficiency, say the researchers.

Though it is a case study of apples from Shimla district, horticulture departments and apple growers in other states will find the article on **page 530** useful.

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