In this issue

Diabetic Nephropathy
Protection by plants

The incidence of diabetes, especially diabetes type II, has been increasing rapidly. So we should expect to see an increase in the complications too – diabetic retinopathy, nephropathy, stroke… Diabetic nephropathy poses the greatest challenge because kidney failure is fatal. What can be done to save diabetic patients from this eventuality?

Researchers from the Sikkim Manipal Institute of Medical Sciences dug into literature in search of medicinal plants that have shown promise in protecting the kidneys. Out of many, research on eleven plants provided evidence in terms of histopathology and biochemistry. In a Review Article in this issue, the researchers delve into the bioactive molecules of these plants and the underlying signalling pathways.

So far, most studies on the protective properties of plant products on the kidneys have focused on animal studies. There is a need to follow up with more detailed animal studies and even human clinical trials, say the authors. The Review Article on **page 542** provides baseline information for researchers who would like to explore further.

Agricultural Advisory
Paradigm shift in extension?

For the Green Revolution to take off, agricultural scientists, researchers and extension workers had to put in a large amount of labour. Convincing traditional farmers to switch to high-yielding varieties and to change agronomic practices required long hours of persuasion and was not easy. Often it required demonstrations in the fields of more progressive farmers.

The times, however, have changed. Today's farmers are more literate and educated. And they have greater access to information, including from the internet. The ICAR-Indian Agricultural Research Institute, New Delhi, therefore, used the opportunity to launch Pusa Samachar, a YouTube based agricultural advisory, on 15 August 2020, uploading a new episode every Saturday. Farmers send their farming-related problems with photographs via WhatsApp and solutions to common problems are tackled in the episodes that follow.

Most episodes are in Hindi, but there are episodes in Telugu, Kannada, Tamil, Bangla and Oriya. Now, researchers assess and evaluate the effort and its impact on farmers. They analysed the content of 49 Hindi episodes and, besides taking into account analytics from YouTube in terms of subscribers, viewership, sharing of content, etc., they also collected primary data from more than 300 people: farmers, students, researchers and extension workers.

Leveraging on the strengths of the internet and social media, tailoring advisory services on seed varieties, scientific agronomic practices including disease and pest management can help farmers in every region, say the authors. It is time that research institutions and agricultural universities initiate similar advisory and extension outreach for the benefit of farmers in their regions.

For more details, see the Research Article on **page 574** in this issue.

High-Yielding Tomatoes
Simple low cost selection

Breeding and selecting high-yielding tomato varieties is time consuming. And then there are extensive field trials. Researchers from the Odisha University of Agriculture and Technology have found a way to make the task easier, less time consuming.

The trick they suggest is simple. Take leaves from the tomato varieties, dip them for some time in indole butyric acid, an auxin known to induce roots, wash the leaves and keep them aside in a beaker with water. In about 10 days, there will be roots sprouting from the leaves. The number of roots per leaf, fresh root weight per leaf and frequency of rooted leaf cuttings correlate with yield.

The researchers tested the leaves of twenty-two tomato genotypes with widely varying yield over the course of two years to convince themselves that the trick really works. In a Research Article on **page 568** in this issue, they report their results.

Now imagine if we could use the same trick with other vegetables.

Nutrient Cycling in Ecosystems
Cold desert, Himachal Pradesh

Goshal village, on the banks of the River Chandra, is the largest village in the Lahaul and Spiti district in Himachal Pradesh. Alluvial deposits from the river support high cropping diversity. Above the agricultural fields, there are alpine pastures that serve as grazing land for the cattle. And, at higher reaches, there are conifer forests and, above that, are pristine glaciers that feed the rivers Chandra and Baga. Thus, the village can boast of three distinct ecosystems: a forest ecosystem, an alpine ecosystem and an agroecosystem. A perfect setting for researchers to compare nutrient cycling in the three ecosystems.

The researchers divided each ecosystem into grids and defined quadrats in each grid: 50 m × 50 m quadrats for the forest ecosystem, 25 m × 25 m quadrats for alpine shrubs and 1 m × 1 m quadrats for grass and herbs. After listing the species, measuring the biomass in each and estimating the nutrient content of the soils, they analysed the cycling of nutrients in each ecosystem. In a Research Communication on **page 592** in this issue, they provide the results.

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