

In this issue

Polygamy in plants

In the last 10 years, Leh berry juice has become popular in India as a fruit drink that doubles up as a stimulant for our immune system. This is due to the research and development done by DRDO, as a part of the mini-mission of cold desert ecosystems. The market for the drink has provided a new ecologically sustainable economic sustenance to many marginal farmers living in high altitudes. So now, besides Ladakh, the plant is grown commercially in J&K, Himachal and Uttarakhand in areas inhospitable to agricultural activities.

The plant, commonly known as sea buckthorn helps to fix nitrogen in the soil and improves soil health. Root nodules for soil health and fruit juice for human health! And the fats extracted from the berry after juicing is sought after by the cosmetic industry. As a raw material for nutraceuticals, scientists are interested in this plant which they call *Hippophae rhamnoides*. *Hippophae* is Greek for horse shine, denoting the value of leaf as an animal feed.

The plant is unusual: male and female plants are separate – like in papaya plants. Usually in such plants, pollination is done not by insects, but by wind. One male plant is enough to pollinate many female plants. So like papaya, the farmers can selectively remove some male plants without any impact on the fruit production.

How many male plants are necessary to provide optimum amount of berries after fertilization in a sea buckthorn plantation? This is the question that Yash Mangla and Rajesh Tandon from Department of Botany, Delhi University asked themselves. In a Research Communication on **page 1731**, they provide evidence that one male is enough to pollinate females distributed around a radius of about 15 m. Now farmers in high altitudes can make their decisions on spacing of male and female plants based on scientific evidence and not guess work.

Oriental but not exotic

Insects have no homeostatic control on their temperature. So their activities, including reproduction, increase with temperature. This becomes a critical issue when we consider climate change: the

warmth will help insects to invade areas where they are not seen now.

A Research Article on **page 1702** in this issue reports the simulation of geographic distribution of the Oriental fruit fly, *Bactrocera dorsalis*, under the climatic regime expected later in this century.

The Oriental fruit fly is a pest that spoils fruits. In fact, it causes a loss of nearly one third of the mango produce in India. Scientists in Bengaluru use CLIMEX software to simulate species distribution. They find that the pest will spread to new areas including Himachal, Uttarakhand and Kashmir, where growing fruits is the only economic activity for many.

The scientists have used the Mk-3.0 version of the climate model from the Commonwealth Scientific and Industrial Organization, which has now been upgraded to Mk-3.5 to overcome some errors. So there may be errors in the simulation too. But the results of the study provide us adequate incentive to look for simple ways to control the pest.

Water-borne disease in fish

There are many water-borne diseases which afflict humans. But how about fish that live in water?

A water mould called *Aphanomyces invadance*, a fungus-like organism, causes red-spot disease in fish. Under certain conditions, the fungus reproduces asexually and disperses a large number of spores. The spores are motile. They swim using flagella and when they come into contact with fish, they sprout hyphae, typical of fungi. The hyphae grow into the body of the fish including skeletal muscles and internal organs. The infection is visible on the skin as granular red spots giving the disease its name.

The cause of the red-spot disease in fish was first discovered in Japan in 1971. In India the outbreak was first reported from Tripura in 1988. It has slowly spread to other parts, and in 2011, there were large-scale fish mortalities in UP due to the disease.

Between 1971 and 2011, the technology for diagnosis of the disease has improved. Now scientists from National Bureau of Fish Genetic Resources Central Institute of Fisheries Education use the latest techniques to examine the

red-spot disease epidemic in UP. In a Research Article on **page 1711**, they have identified seven more species, adding to the earlier list of 94 species of fish that can be affected.

Lovers of fish need not despair. Only fish growing in fresh and slightly brackish water are affected. The fungus does not reproduce in saline sea waters. Yet, inland fisheries in India support the livelihood of a large number of people and precautions need to be taken to control the spread of the disease.

Ranking universities

Universities which give ranks to students are themselves getting ranked now. The problem started in the western countries where falling enrolments led to competition to get students: a higher rank attracts good students. It soon spread to China where ‘internationalization’ of universities was seen as a necessary evil to compete with western universities. Thus starting with Academic Ranking of World Universities (ARWU) in 2003, quite a few mechanisms for ranking universities have evolved. Times Higher Education (THE) ranking, Quacquarelli Symonds (QS) ranking and SCLmago Institutions Ranking (SIR) have become quite popular.

Researchers from University of Belgrade report the use of a technique called I-distance to enhance the ranking methods. They apply this technique to look at the Asian universities in general, and Indian universities in particular. See **page 1647**.

India, with its huge young population is struggling to create more universities and has not yet woken up to the international competition for students. In fact, some universities are reluctant to go through even the evaluation needed for accreditation by the University Grants Commission. It is therefore heartening to see at least some of the Indian institutions in the top list.

Though there are some commonalities between the different ranking methodologies, there are differences in the parameters used by them. And since the different methods give different results, it is perhaps time to rank the methods of ranking universities.

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