

In this issue

Centrally Funded Institutions

Research contributions

Research in India is mostly funded by the government. About 45 per cent of the gross expenditure on research and development comes from the Central Government. A General Article in this issue by researchers from the Banaras Hindu University examines research output from India's major centrally funded institutions and institution systems.

They divided the institutions into three categories: Higher Education Institutions, Ministries and Departments and Councils/Agencies. From the Web of Science, they extracted the data of articles and reviews published by the institutions from 2001 to 2020 and they analysed research output volume and patterns of growth in research output. The research contribution from centrally funded institutions increased from about 62% in 2001–06 to 72% in 2016–20. To understand the patterns of growth in different categories of institutions, read on from **page 1082**.

Agricultural Research

Productivity factors

What are the factors impacting the research productivity of a typical agricultural university? What factors do people working there agree on as being important for research productivity?

Researchers from the Professor Jayashankar Telangana State Agricultural University, Hyderabad took a list of 20 factors pertaining to individual scientists and 20 more that are related to the institution. The scientists in the university ranked them according to five categories, from highly important to least important.

Psychosocial factors such as commitment, achievement motivation, self-efficacy, time-utilization, level of aspiration and creativity and psychomotor factors such as discipline and research knowledge and skills were judged as most important among individual factors. Among institutional factors, availability of a mentoring system, research assis-

tance, infrastructural facilities, feasibility for interdisciplinary research, research collaboration, professional development opportunities, work flexibility, the university's mission and vision, participative leadership and decision-making and performance-linked promotional opportunity were judged as most important research-related factors. Job-related factors such as involvement in administrative activities and job security were also seen as important by the research community in the university.

To assess whether this case study of one state agricultural university holds good for others too, turn to the Research Article on **page 1101** in this issue.

Salt Pan Bacteria

Saving chilli plants

Researchers from Goa isolated bacteria from water, sediment and bio-film samples collected from three salt pans there. Twenty-one from 196 isolates showed an inhibitory effect on the growth of the mycelia of fungi that are common agricultural pathogens. Seven of the twenty-one showed plant growth promotion too, as per their tests on chilli plants. These bacteria, from the *Brevibacterium* and *Bacillus* genera, did not show any toxicity in preliminary studies. They were also able to survive and thrive in soil under different ambient conditions.

The bacteria may serve as biocontrol agents against fungal pathogens in agriculture, say the researchers. They also suggest possible mechanisms for the antifungal and plant growth promoting activity of the bacteria in a Research Article on **page 1129** in this issue.

Traffic Stream Reliability

Estimates from GPS on buses

It is not easy to guess the amount of time taken to travel from one place in a city with congested roads, mixed traffic and no lane discipline. Both travellers and traffic planners need to have

reliable measures of traffic streams at different times.

Lelitha Vanajakshi and team from IIT Madras have now come out with a suggestion for a more reliable measure as well as a technologically feasible process for data collection to estimate those measures for specific stretches of Indian city roads. They provide the details of their experiments to generate the data using Wi-Fi at specific points along the road and a GPS mounted on a bus plying between the Bharathi Nagar and Vijaya Nagar intersection, in south Chennai. The calculations from the data provide an index of the buffer time to be allocated for planning travel at different times of the day, on any day of the week along this stretch.

Traffic managers of Indian cities and commuters need to read the Research Article on **page 1107** in this issue, for tips about evidence-based decisions.

Vegetable Oil in India

Per capita consumption

Edible oil consumption has been increasing globally. Since vegetable oil is used for other purposes such as making soaps, candles and even electrical insulators, and since our own choices of cooking oil also change, the prices oscillate despite regulations.

To understand the domestic consumption patterns of vegetable oils in India, researchers from the ICAR-Indian Institute of Oilseeds Research undertook an online survey. In a Research Communication, they provide an analysis of average monthly per capita consumption of households, distribution of households in urban or rural areas, consumption by different income groups, the type of oil and brand most preferred by consumers, crop-wise percentage of consumers based on food habits and percentage of consumers using the same oil or multiple oils throughout the year.

Read on from **page 1159** in this issue.

K. P. Madhu
Science Writing Consultant