32MYM

32ND MID YEAR MEETING OF THE INDIAN ACADEMY OF SCIENCES

VIRTUAL / CISCO WEBEX EVENT

4, 11, 18 & 25 JUNE | 16:00–18:30 h

2 JULY | 14:00–19.30 h

EVENT SCHEDULE

- SYMPOSIUM
- PANEL DISCUSSION
- PUBLIC LECTURE

2 JULY 2021 (FRIDAY)

14:00–16:00 h **SYMPOSIUM**

Pollinators and Seed Dispersers: The Natural Gardeners

On the occasion of the *International Year of Fruits and Vegetables (FAO)*

14:00–14:10 h — Introductory Address
Renee M Borges and K R Shivanna
IISc, Bengaluru and ATREE, Bengaluru

14:10–14:35 h — Reproductive Biology of Himalayan Seabuckthorn
Rajesh Tandon
University of Delhi, Delhi

14:35–15:05 h — Pollination of Fruit Crops in India
Dharam Pal Abrol
Sher-e-Kashmir University of Agricultural Sciences & Technology, Jammu

15:05–15:30 h — Pollinator Mediated Gene Flow between Crops and Their Wild Relatives: The Case of the Brinjal
Priya Davidar
Pondicherry University (Retd.)

15:30–15:55 h — Frugivory and Seed Dispersal by Hornbills – Are They Truly Farmers of the Forest?
Aparajita Datta
Nature Conservation Foundation, Bengaluru

16:00–16:30 h **BREAK**

16:30–17:45 h **PANEL DISCUSSION:**
Academic Freedom & Institutional Autonomy

17:45–18:00 h **BREAK**

18:00–19:30 h **PUBLIC LECTURE:**
Getting Out of a Poverty Trap
Prof. Abhijeet Vinayak Banerjee, Nobel Laureate.

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YouTube Live Stream: *youtu.be/MHqVDqonC_8*

INTERNATIONAL YEAR OF FRUITS AND VEGETABLES 2021

32MYM 32ND MID YEAR MEETING OF THE INDIAN ACADEMY OF SCIENCES

A CISCO WEBEX EVENT | 4, 11, 18, 25 JUNE & 2 JULY

SYMPOSIUM

POLLINATORS AND SEED DISPERSERS: NATURE'S GARDENERS

2 July 2021 | 14:00–16:00 h

Abstract e-Book

Symposium Organisers: *Renee M Borges and K R Shivanna*

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RAJESH TANDON
University of Delhi

Rajesh Tandonis is presently working as Professor at the Dept .of Botany, University of Delhi. He obtained his PhD in 1998 from the University of Delhi. He has been teaching and conducting research at the Institute for over 18 years. His research group has been involved in generating database on the reproductive biology of many plant species for their further application in germplasm conservation and sustainable utilization. His work has demonstrated that many of these species are self-incompatible, and exhibit obligate reliance on pollinators, be it birds, bats, honeybees, flies and even squirrels and snails. His findings on the reproductive biology of threatened tree species, the Indian Podostemaceae, cryopreservation of pollen, pollination ecology, plant-pollinator-robber interaction, are among the frequently cited authentic works worldwide. He has published over 55 manuscripts, and contributed chapters to several books.

02 July 2021
14:10–14:35 h

INTERNATIONAL YEAR OF FRUITS AND VEGETABLES 2021

Reproductive Biology of Himalayan Seabuckthorn

Himalayan Seabuckthorn (*Hippophae rhamnoides*) is an intriguing high altitude wild plant species of immense agronomic importance. The plant is prized for highly nutritious berry-like fruits that are used for making a variety of nutraceutical and medicinal products. At present, fruits are exclusively sourced from the wild, and commercial plantations of this predominantly dioecious species are yet to be established. Our over a decade-long ongoingstudies in Leh–Ladakh region and adjoining valleys have generated hitherto unknown information on several reproductive attributes which would be useful in organising the orchards of this species. Besides, some recent findings on the sexuality of plants suggest that the species can serve as a promising model system to investigate evolutionary dynamics of dioecy.

Their studies have shown that Seabuckthorn is a genetically diverse species. The species is subdioecious, as the populations are comprised of male, female and polygamomonoecious plants.Such populations of mixed sexuality are considered to represent an evolutionary intermediate state between cosexuality and dioecy. His group have identified a couple of reliable gender-specific by employing AFLP and RDA markers, which would be helpful in early recognition of males while establishing the orchards. In silico analysis of one of the gender-specific loci showed accumulation of satellite sequences and transposons, indicating their degenerate nature. Also, there is high level of similarity between male and female genomes, which possibly suggests a recent evolutionary divergence of genders in the species

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DHARAM PAL ABROL

Ex-Dean Faculty of Agriculture
Sher-e-Kashmir University of
Agricultural Sciences & Technology

Dr D P Abrol has served the Sher-e-Kashmir University of Agricultural Sciences & Technology in various capacities. – Head of the Division of Entomology, Controller of Examinations, etc. He has specialized in pest management, honeybee management and pollination biology. He is a Fellow of the National Academy of Agricultural Sciences, India, and the Royal Entomological Society London, UK. He is a recipient of numerous awards including the Young Scientist Award (1992), conferred by the J&K State Council, the Pran Vohra Award (1993), the Prof T N Ananthakrishnan Award 1997–1998, the Dr Rajendra Prasad Puruskar 1999– 2000 award, the 11th Apicultural Association Award (2010) for outstanding contributions in apiculture. King Saud University conferred on him a gold medal for development of apiculture in Asia.

02 July 2021
14:35–15:05 h

INTERNATIONAL YEAR OF FRUITS AND VEGETABLES 2021

Pollination of Fruit Crops in India

Fruits provide a dynamic tool for enhancing economic returns, creating employment avenues and ensuring ecological sustainability. It is getting obvious that we will have to produce more and more from less and less land and water. This can be achieved only through the ever-green revolution pathway which can help us to increase productivity in perpetuity without associated ecological harm. Horticultural remedy is an answer to the widespread malnutrition in our country There is a need for enhanced growth and productivity and quality of temperate, tropical and sub-tropical fruits.

Production constraints include two diverse but mutually interlinked approaches such as attack of pests on one hand and inadequate pollination on the other. The widespread use of pesticides in modern agriculture throughout the world have become necessary for the protection of the plants against insect pests and diseases to obtain higher yields to meet out the food requirement of increasing population but the injudicious use of pesticides has resulted in contamination of agroecosystem and agriculture produce including nectar and pollen and caused heavy losses to the pollinators. Such contaminated nectar and pollen when brought to hive may cause damage to brood besides the contamination of the stored honey. Pollinators provide an ecosystem service that enables plants to produce fruits and seeds. About 70%of the world's plants require a pollinator to produce fruits/seed of which 35% are crop species and this account for one in three mouthfuls of food and drink we consume.

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PRIYA DAVIDAR

Pondicherry University (Retd.)

Dr. Priya Davidar is a retired Professor of Ecology from Pondicherry University. She has a Ph.D. in Zoology from Bombay University and a S.M. in public health from Harvard University. She was a Post Doctoral fellow and later a Senior fellow at the Smithsonian Institution, USA. She is a fellow of the American Association for the Advancement of Science. She has carried out research in the areas of biogeography, pollination biology and conservation biology.

02 July 2021
15:05–15:30 h

INTERNATIONAL YEAR OF FRUITS AND VEGETABLES 2021

Pollinator Mediated Gene Flow Between Crops and their Wild Relatives: The Case of the Brinjal

Pollinators play diverse roles in agro-ecosystems from enhancing fruit production to enabling gene flow between varieties. Wild relatives of crop plants are valued for their use in crop breeding as well as their historical and cultural connections with modern cultivars. Natural hybridization between crop plants and their wild relatives is ubiquitous in nature, and has been estimated to be 88% in 25 major crop plants if they co-occur. Brinjal (*Solanummelongena* L.) is an ancient and popular fruit vegetable of Asian origin which is cultivated worldwide, and *Solanuminsanum* L. (or *S. melongenavar. insanum*), common across India, may be the nearest ancestor of cropbrinjal. Both wild and crop brinjal are andromonoecious, and commonly buzz pollinated by solitary bees. They have studied the potential for gene flow between crop and wild brinjal in several regions in the Western Ghats, southern India, as part of assessing risk of introducing transgenic brinjal. They have found that the wild brinjal tended to co-occur alongside brinjal crops, overlapped in flowering times, shared pollinators, and formed fertile F1 hybrids. They used molecular tools to demonstrate gene flow between crop and nearby wild populations, and conclude that there is considerable risk of the transgene escaping into the wild populations. There is therefore an urgent need to take in situ conservation measures to protect these valuable wild germplasm resources.

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APARAJITA DATTA

Nature Conservation Foundation, Bengaluru

Aparajita leads NCF's Eastern Himalaya programme under which research and community-based conservation with hornbills as a flagship have been carried out for 20 years. She completed her PhD on hornbill biology and their role in seed dispersal in 2000. She and her team have been engaged in research and conservation with communities in Arunachal Pradesh. She is currently the Co-Chair (Asia) for the IUCN SSC Hornbill Specialist Group. She has been a member of the National Tiger Conservation Authority (NTCA) and the State Wildlife Advisory Board of Arunachal and engaged with the government on the management/ evaluation of some tiger reserves and several Protected Areas and critiqued proposed hydro-power projects in north-east India. She has written books for children and helped initiate a Nature Education program for children in Arunachal.

02 July 2021
15:30–15:55 h

INTERNATIONAL YEAR OF FRUITS AND VEGETABLES 2021

Frugivory and Seed Dispersal by Hornbills – Are they Truly Farmers of the Forest?

Her talk will examine the evidence for the functional role that forest hornbills play as seed dispersers in the tropical forests of the Eastern Himalaya. She will present the key results of understanding the qualitative and quantitative aspects of seed dispersal effectiveness of hornbills through an assessment of visitation rates and fruit removal at fruiting trees, seed handling behaviour, treatment of seeds in the gut, the sites of seed deposition and their suitability for germination and the post-dispersal fate of seeds and distances that seeds are dispersed from parent trees. This understanding of the significant role played by hornbills as seed dispersers has emerged from her initial observational studies in the nineties to addressing some key questions with students/colleagues through methods such as telemetry by tagging hornbills in 2014–2015.

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PANEL DISCUSSION

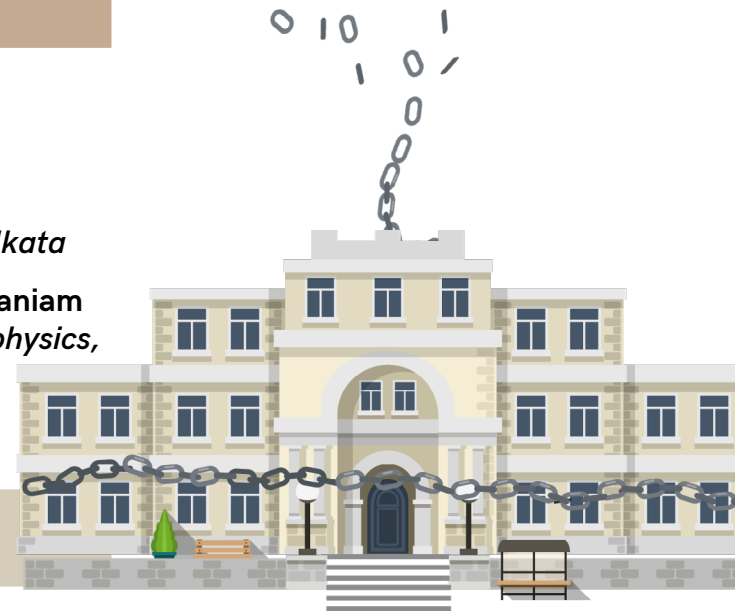
Academic Freedom and Institutional Autonomy

Link for Webex attendees: *bit.ly/MYM2021_Day5*

2 JULY 2021 (FRIDAY) 16:30–17:45 h

With a strong commitment to diversity, free and creative thinking, an Academic Institution is expected to educate citizens through creation and dissemination of knowledge, that would impact society and help achieving a more safe, just and fair state of our world. Central to this is the Academic Freedom, which is necessarily supported by Institutional Autonomy, defined by UNESCO as "a degree of self-governance, necessary for effective decision making by institutes of higher education regarding their academic work standards, management, and related activities." Autonomy is a multi-scale concept, that applies to institutions, departments, administration, faculty members, staff and students. While greater autonomy is desirable ideally, its practical implementation needs to maintain an acceptable level of accountability, within the socio-economic framework available locally. This panel discussion is expected to touch various aspects of Academic Freedom and Institutional Autonomy, particularly in the context of universities and academic institutes in India, and stimulate ideas and development of optimalmethods to achieve greater autonomy and accountability.

16:30 – 16:35 h	Opening Remarks & Introduction **Umesh V Waghmare** *IASc, Bengaluru and JNCASR, Bengaluru*
16:35 – 17:15 h	Remarks by the Panelists
16:35 – 16:45 h	**Prof. Sandeep Sancheti** *Marwadi University, Rajkot*
16:45 – 16:55 h	**Supriya Chaudhuri** *Jadavpur University, Kolkata*
16:55 – 17:05 h	**Prof. Annapurni Subramaniam** *Indian Institute of Astrophysics, Bengaluru*
17:05 – 17:15 h	**Prof. M S Raghunathan** *IIT-Bombay*
17:15 – 17:40 h	Open Discussion & Interactions



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PUBLIC LECTURE

18:00 – 19:30 h

Getting out of a poverty trap

2 JULY 2021 (FRIDAY) 18:00 h

A TALK BY Abhijit Banerjee

One of humanity's most urgent issues is the reduction of global poverty, in all its forms. Abhijit Banerjee shared the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2019 with Esther Duflo, and Michael Kremer for having introduced a new approach to obtaining reliable answers about the best ways to fight global poverty. It involves dividing this issue into smaller, more manageable, questions. Since the mid-1990s, they have been able to test a range of interventions in different areas using field experiments, for example for improving educational outcomes or child health.

Prof. Partha Pratim Majumder, President, IASc, will chair this session.

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YouTube Live Stream: *youtu.be/MHqVDqonC_8*