CHEMICAL AND MOLECULAR ECOLOGY OF INSECT–PLANT INTERACTIONS: TOWARDS ECOLOGICAL SUSTAINABILITY

OVERVIEW

Insects are the most diverse group of organisms that occupy this earth. A vast majority of them feed on plants, the most dominant group of organisms on this earth, and in empirical terms approximately 15% of the plant productivity is affected by plant-feeding arthropods. In terms of agriculture, this value is significant and nothing greater needs to be said emphasizing the importance of understanding the dynamics of their interactions. Such an understanding has twofold purposes:

1. Knowing how the interacting genomes behave and evolve over time, especially in the contexts of susceptible and resistant plants to feeding arthropods.
2. Equipping ourselves with efficient eco-friendly management of arthropod populations in agricultural contexts.

India is predominantly an agricultural country. Considerable economic losses are being encountered solely because of the damage inflicted by plant-feeding arthropods. Therefore, a comprehensive understanding of the chemical and molecular ecology of insect–plant interactions becomes significant. Ecological management of pestiferous arthropods in agricultural contexts will be a subsumed theme in this course, given that the world today is keenly and enthusiastically rejecting the use of aggressive chemicals, viz., synthetic pesticides, due to their collateral disadvantages to humans specifically and the environment generally.

The proposed course, ‘Chemical and Molecular Ecology of Insect–Plant Interactions’ will aim to clarify many a subtle element of the ecological dynamics that occurs between insects and plants, thus enabling the building of a clear and strong foundation in many young scientists of India who will be keen on advancing in this field.

OBJECTIVES

Through this concentrated program, the participants will be enabled with skills to perceive the concept of sustainable earth, particularly in the context of understanding how a sound understanding of ecological theory empowers one to think in terms of managing practical problems using eco-friendly methods rather than using chemicals, which have strong contra-indications and implications on to both humans and the environment.

Specific objectives

i. To illustrate and clarify ecological theory relevant to insect–plant interactions with pertinent tools and examples.
ii. To learn to apply the learned theory as said in (ii) in real-life agricultural contexts and be capable of developing contextually appropriate and meaningful management designs.
iii. Application of ecological understanding of insect–plant interaction in agricultural context.
iv. To achieve sustainable management practices.

Number of participants for the course will be limited to 25. Course participants will learn the following topics through lectures, practicals, and demonstrations.

MODULES

- Chemical and Molecular Ecology of Insect–Plant Interactions - 26 February to 4 March 2019
  - Focal topics:
    - Plant-feeding insects, trends of specialization, and plant chemistry
    - Plant selection: plant signals and insect behavior
    - Important characters for the recognition of superfamilies
    - Biochemical ecology of host-specific and host-non-specific insects
    - Biochemical ecology of specific and non-specific insects involved in three component interactions
    - Molecular ecology of plant-feeding insects from the Hemiptera
    - Ecology and evolution of closely associated two unrelated genomes
    - Tritrophic interactions
    - Chemical ecology of insect natural enemies
    - Conservation biological control
    - Application of ecological understanding of insect–plant interaction in agricultural context.
    - Achieving sustainable management

ELIGIBILITY

Students at levels MSc/MTech/PhD and Faculty from reputed academic institutions and technical institutions with basic knowledge on insects:

Others whose careers the course would clearly be relevant to and who would be expected to gain substantially from it.

FEES

Participants are supposed to remit the fee as follows after they receive the selection letter from the course coordinator based on their submission of the statement of purpose for attending the course.

- Participants from abroad: US $ 250
- Participants from South Asia and Africa: $ 150
- Student Participants from India: Rs. 2500/-
- Student participants from host institution: Rs. 1500/-

The above fee is towards instructional materials, lunch, tea, snacks etc. Expenses for accommodation and the travel should be met by the participants.
REGISTRATION PROCESS

Step 1: Submit a statement of purpose to the course co-ordinator for attending the course.

Step 2: Once you receive the intimation from the Course Coordinator, the fee (as applicable) need to be paid. The participants will be provided with accommodation (if available)

Mode of Payment:

Registration fee should be paid in favor of General Convener, Seminar/Workshop, Department of Zoology by way of Account Transfer or Demand Draft payable at A/c No. 672 11112197 State Bank of India, Calicut University Branch (IFS Code: SBIN 0070200) Kerala, India.

The last date of application is 16/02/2019
THE FACULTY

Dr. Anantanarayanan Raman PhD, DSc
Professor of Ecological Agriculture &
Sustainable Land Management
Charles Sturt University
Orange, NSW 2800
Australia

Raman currently teaches Ecological Agriculture, Sustainable Land Management, and Agroecology to undergraduate and postgraduate students at Charles Sturt University, Orange Campus, New South Wales. He has been extensively studying the chemical and molecular ecology of plant-feeding arthropods and their host plants. He has also extensively published in the fields of soil ecology, soil health management, and agroforestry. He was a two-times awardee of Deutscher Akademischer Austauschdienst (DAAD) grants (1991, 2001) and an awardee of Fulbright grant (1990). He has published a little more than 350 professional journal articles and 12 books, the most recent of them being ‘Biological Control of Tropical Weeds using Arthropods’ (2009, Cambridge University Press, Cambridge, UK).

Dr. M. Nasser

Dr. Nasser is an Associate Professor in the Department of Zoology, University of Calicut and currently teaches Insect Ecology and Ethology to Post graduate students.

His research interest lies in biological control of insect pests of crops and insect-plant interactions.
GIAN COURSE REGISTRATION FORM
(26th February 2019 to 4th March 2019)

NAME:

DESIGNATION:

ORGANIZATION:

ADDRESS:

EMAIL ID:

MOBILE NO.:

COURSE NAME:

Fees payable to “General Convener, Seminar/Workshop, Department of Zoology”

TRANSACTION NO. (e-transfer/RTGS/NEFT):

DEMAND DRAFT NO. (If paid by Demand Draft):

Place: ............
Date: ............. Signature of the Applicant

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