

Report on “DNA Barcoding for Insect Diagnosis”

P R Shashank*, Debjani Dey & Naresh M Meshram

Division of Entomology, ICAR-Indian Agriculture Research Institute, New Delhi-110 012, India

The three days workshop on "DNA Barcoding for Insect Diagnosis" was conducted as part of Scientific Social Responsibility Policy under the SERB scheme Core Research Grant (CRG) funded for the project entitled "Phylogeny, classification and biogeography of leaf roller moths belonging to family Tortricidae (Lepidoptera)" from 19 February, 2020 to 21 February, 2020.

The purpose behind organizing this workshop is primarily aimed at providing hands on training to researchers and teachers with interest in biodiversity, ecology, biosurveillance, biomonitoring, phylogeography, conservation, biological invasion and related areas of biology on "DNA BARCODING". DNA barcoding facilitates fast and reliable taxonomic identification of organisms using short DNA sequences. It has become popular in academic research to address societal issues such as diagnosis of invasive pests, resolve taxonomic conflicts, biodiversity, environment monitoring and conservation. India is one of the richest countries in the world in terms of biodiversity. This natural variation in life is also reflected in the demography of the land. Precise documentation and conservation is the key to the sustainable utilization of biodiversity. Nevertheless, the acute shortage of taxonomic expertise is one of the major obstacles in the documentation, conservation and sustainable use of biodiversity. This is evident from the fact that only 2600 barcodes have been generated from India while about 250000 barcodes have been generated in the world so far. This workshop included both theory and practical classes to provide detailed hands on experience of DNA barcoding to the participants. This workshop helped in enhancing the knowledge and capacity building of participants.

Total 52 applications were received for the workshop. Out of these, 50 were from India

(representing 14 different states) and 2 were from outside India (Bhutan and China). After thorough screening of the applications, we have selected 30 candidates representing 12 states, including, 12 female and 18 male participants. The workshop started with inauguration Session chaired by Dr. A.K. Singh, Director, ICAR-Indian Agricultural Research Institute, New Delhi. Over the three days workshop included different lectures covering, Integrative taxonomy, Introduction to DNA barcoding, PCR and its application, Introduction and applications of Metabarcoding and Introduction Bioinformatics. Workshop was planned to covered to provide hands on expereinece in basic molecular techniques in DNA barcoding. On the first day participant were briefed about how to maintain voucher specimens of insects for DNA barcoding alon with visit to National Pusa Collection (NPC), Division of Entomology, ICAR-IARI, New Delhi which is one of the largest insect collections of India. Further, participant was trained for for tissue extraction from insects to isolate DNA. Second day participants have actively involved in hand on experience for isolation and quantification of DNA, PCR amplification of selected gene and preparation of PCR product for sequencing. Last day of the workshop lectures cum demonstrations sessions were conducted on assessing sequencing quality, estimating molecular diversity and indentifying unknown sequences against reference databases.

After the completion of the workshop feedback of 30 participants was evaluated and it was rated very good to excellent with suggestion that workshop should be for at least 10 days. The workshop concluded with the valedictory session.

We believe that such workshops will be helpful in developing human resource in DNA barcoding which will enhance documentation of biodiversity in India.

*Correspondence:
E-mail: spathour@gmail.com