

Biotechnological approaches in bioresource management*

Bioresource is occurring at an alarming rate, as a consequence of increasing population pressure, agricultural land degradation and urbanization. The whole biosphere is facing a number of formidable environmental problems including mainly anthropogenic pressure. Considering the growing awareness on the imperative need to protect and manage various ecosystems and pristine natural resources, this conference intended to explore the current status of development and technology in the field of biodiversity of bioresource management. The four-day conference mainly focused on current status of bioresource, impact of natural calamities, anthropogenic activities on homeostatic, diversity of bioresource and approaches in bioresource management. More than 300 delegates from India, Japan, South America, Iran, Bangladesh and Malaysia participated and presented their findings. There were about 230 research papers, 6 plenary lectures and 20 invited speakers from different parts of the world.

S. P. Thyagarajan (University of Madras, Chennai) in his inaugural talk emphasized the scope of biotechnological applications and its employment opportunities and also elaborated on the protection of bioresource and its environment.

C. Thangamuthu (Bharathidasan University, Tiruchirappalli) who presided drew the attention of the participants to the need to preserve biodiversity for prosperity through careful application of biotechnology and judicious management of bioresource. K. V. Krishnamurthy (Bharathidasan University) in his keynote address urged the policymakers to realize the economic value of the biodiversity of the flora and fauna and the reasons for depletion of bioresource management due to climatic changes.

S. Sivaramkrishnan (Bharathidasan University) dealt with importance of biodiversity of bioresource development and biological wealth of a nation. He pointed out various environmental problems in

different ecosystem mainly due to anthropogenic activities. He stressed on the all important need to protect and manage natural resources. B. K. Tyagi (Centre for Research in Medical Entomology, Madurai) spoke about epidemiology and steps to be taken in order to control dengue and its vector, *Aedes* spp. in the changing climate of Kerala. He stated that dengue is regarded as the fastest emerging infection, and pointed out that the emergence and propagation of the infection of dengue is due to drastic climatic change and also anthropocentric activities. Ong Ming Thong (Asian Institute of Medicine, Science and Technology, Malaysia) stressed on the significance of plant resources which can be exploited and put to beneficial use in the treatment of cancer and other deadly diseases. He also spoke about the investigation presently being conducted on valuable compounds from plants and their economic value. Lutfur Rahman (Bangladesh Agricultural University, Bangladesh) said that as human population is increasing rapidly in many countries, a crisis is emerging in managing its food security needs. It is imperative to put advanced technology for improvement of crop varieties and plant genetic resources of diverse products, where farmers are to be trained on the basis of genetic diversity-based production and technology. The market price and diversity of products at the producer's level are also essential for development of agriculture ecosystem.

K. Murugan (Bharathiar University, Coimbatore) emphasized on the conservation of butterfly diversity and host-plant selection. He stated that the endemic species of butterflies and their host plants are lost rapidly due to various man-made activities. Butterflies act as indicators of environmental change and nature conservation. He pointed out further the influence of physical and biochemical nature of host plants for selection of nutritional ecology and oviposition of butterflies and moths.

S. Sithanatham (Sun Agro Biotech Research Centre, Chennai) discussed agricultural biotechnology and ecofriendly crop protection. Egg parasitoids of insects constitute an important group of natural

enemies of some major crop pests. Microbes can be used as control agents for several soil-borne insect pests. Trichogrammatids are extensively used in augmentative biocontrol and he discussed the role of biotechnological R&D in enhancing the efficacy, durability and cost-effectiveness of biopesticide products.

S. Karuthapandian (Alagappa University, Karaikudi) dealt with advances in evaluation and exploration of marine microbial resources. He described about the widely practiced genotypic characterization for bacterial identification. He also stressed on analysis of a stable part of the genetic code for phylogenetic analysis and evaluation of bacterial diversity associated with coral reef ecosystem of the Gulf of Manner and exploration for biotechnological prospects.

G. Vanithakumari (Bharathiar University) described the significance of successful conservation of herbals for health on the basis of ecosystem-based knowledge. Similarly, the importance of plant resource in traditional medicine was highlighted by Piri Kh (Bau Ali Sina University, Iran).

P. Devaraj (Forest Department, Pondicherry) explained about the disastrous tsunami and how to protect lives from such disasters. He described the nature of a shelter belt of trees and other vegetation along the coastal line and mangroves in backwaters which would act as a first line of defence against effects of frequent cyclonic storms, heavy winds and tsunami.

V. H. Mulimani (Gulbarga University, Gulbarga) talked about the biotechnological implications to produce enzymes like protease and α -amylase from agrochemical wastes through solid state fermentation.

Nethi Somasekhar (Central Potato Research Station, Ooty) talked about soil nematode biodiversity. Nematodes play a key role in the functioning of soil food-webs and also as ecological indicators for assessing and monitoring changes in natural and agro-ecosystems induced by a variety of disturbances.

G. Marimuthu (Madurai Kamaraj University, Madurai) delivered a talk on ecological balance and the role of bats on

*A report on the International Conference on 'Biotechnological Approaches in Bioresource Management' held at the Department of Biotechnology, Bharathidasan University, Tiruchirappalli, India during 23–26 January 2007.

management of insects. Bats are the second largest mammals in the world with more than 1000 species distributed throughout the world; 120 species are present in India. He explained about their behaviours, feeding habitats as well as the beneficial role of bats.

P. Nagarajan (Centre for Plant Molecular Biology, Agricultural University, Coimbatore) gave a lecture on applications of various molecular biology techniques and bioinformatics tools to enhance plant biotechnology.

S. Sudhakaran (Asian Institute of Medicine) delivered a talk on exploiting natural micro flora for cleaning up the environment. He discussed hydrocarbons which are one of the major causes of environmental pollutants and also degradation of oil-degrading microbes.

Preeti Sharma Rawat (Dayalbagh Educational Institute, Agra) described the status and management of mosquito-borne diseases and their control. She talked about the purpose and current measures for mosquito control using modern synthetic insecticides which are highly toxic and persistent in the environment; in order to minimize their use, botanical/herbal insecticides are to be used from alternative sources.

V. Gomathi (Tamil Nadu Agricultural University, Coimbatore) focused on methane production from termite guts. She correlated the influence of temperature on production of methane from the bacteria, methanobacteria and methanosarcina.

A. Rajendran (Bharathidasan University) stated about the strategy of various

research institutes and current programmes on bioresource management.

A. Ramachandran (Forest Department, Chennai) emphasized on climate change and its vulnerability on bioresource management and also explained the marine biogeochemical and ecological processes. He further pointed out that for sustainable management we have to concentrate on green water management, rhizosphere engineering, development of drought and saline-tolerant species and conservation strategies with capacity building.

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