Divecha Centre for Climate Change
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SEMINAR NOTICE

Title: **"AGRO-ECOTECHNOLOGY AND CLIMATE SMART AGRICULTURE: PATHS TOWARD SUSTAINABLE RURAL DEVELOPMENT"**

Speaker: **Prof. Sudip Mitra**
Head, Centre for Disaster Management & Research (CDMR)
School of Agro and Rural Technology (SART), IIT Guwahati, Assam

Date: 18th July 2023 (Tuesday)

Time: 11am

Venue: DCCC Auditorium, 2nd Floor, D314.

Coffee/Tea: 10.30 to 11.00 am

Speaker Bio: -

Dr. Sudip Mitra is the founding Head of the Centre for Disaster Management & Research (CDMR), Indian Institute of Technology (IIT) Guwahati, Assam, and Associate Professor at the School of Agro & Rural Technology, IIT-Guwahati. Prior to joining IIT-Guwahati, he served as a regular faculty at various institutes/universities viz. Tezpur (Central) University, Assam; Jawaharlal Nehru University (JNU), New Delhi; National Institute of Disaster Management (NIDM), New Delhi. He is also a Fulbright fellow & Lead Fellow, India. He served as a Task Force Member of MNREGA convergence of schemes under the Ministry of Rural Development, Government of India (2008).

In his 22 years of professional life, Dr. Mitra is actively involved in climate change and adaptation research, policy, and outreach. His present research looks at climate-smart agriculture and application of indigenous resources and technologies for soil quality improvement. Dr. Mitra also served as a member of the Global Technology Watch Group, TIFAC, Department of Science & Technology (DST), Govt. of India. He is an elected member of the National Academy of Science, India (NASI). He has guided three PhDs, and ten more are currently working under his supervision

Abstract: -

India has multiple issues due to its rapid rampant urbanization and ever-increasing urban population. The increased generation of non-segregated municipal solid waste (MSW) and its unregulated dumping in open dumping sites is a major fallout of these issues. As a repository for organics and HMs, an open dumping site poses a serious threat to human health and the environment, including the soil. These degraded soils will eventually endanger the long-term viability of agricultural production, besides seriously impacting and causing long-term harm to the environment and

human health. HMs are cytotoxic, buried, persistent, and biological accumulators (Sinha et al., 2009). Consequently, soil quality which is determined by various biological and non-biological processes, is adversely influenced by HMs. The current demands for food and sustainable agriculture, could be resolved by using soluble fertilizers and soil amendments, which can increase food production while simultaneously improving soil fertility and avoiding environmental damage.

The use of biological systems such as plants and plant growth promoting rhizobacteria (PGPR) to remediate (HMs) damaged environments is an increasingly important area of research. Microorganism-based bioremediation of HMs is more efficient, cost-effective, and environmentally friendly. The ensuing reduction in metal toxicity and improvement in soil quality will lead to increased food production over time. In addition, the microbes possess an inherent ability to scavenge and fix macronutrients such as P, K, and N in the soil and make them available to plants (Nacoon et al., 2020; Parastesh et al., 2019). MSW dumping sites are among the most difficult, as evidenced by changing temperatures, acidic pH, precipitation, and the disposal of various types of wastes (Ben Hamed et al., 2020).

Agroecotechnological (AET) techniques are frequently seen as the most effective means of addressing challenges related to agriculture and the environment. Some of the strategies adopted for the AET are therefore listed below:

Development of cyclic, sustainable, and chemical-free agritechniques.
Conservation of resources during farming cultivation.
Protection and sustaining environmental biodiversity during the farming process.
Implementation of a multi-crop, integrated management system.
Application of biological mechanisms to improve soil quality.
Maintenance of a balanced input-output system by the AET lab.

Climate smart agriculture (CSA) is the new way of doing agriculture to address food security along with adaptation and mitigation. Various agrecotechnologies can play a pivotal role in the progress of CSA and thus could facilitate sustainable rural development.

All are welcome!