

## **One-day sophisticated instrument demonstration to B.Sc. Microbiology students of NBBGC, Tadong at Sikkim University**

Organized by

*Department of Microbiology, NBBGC in collaboration with Horticulture Department, Sikkim University on 15th May 2023*

On May 15, 2023, the Department of Microbiology, NBBGC collaborated with the Department of Horticulture, Sikkim University to organize a sophisticated instrument demonstration. The event aimed to provide practical exposure to the students of NBBGC, B.Sc. Microbiology 2<sup>nd</sup> semester students. Various cutting-edge instruments were showcased, enabling students to gain hands-on experience in several important areas of Microbiology and Horticulture.

The instruments demonstrated during the event included:

1. Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES): This instrument was utilized for micronutrient and elemental analysis. It allowed precise detection and quantification of various elements present in samples.
2. Atomic Absorption Spectroscopy (AAS): AAS was demonstrated for metal analysis of water/soil samples after acid-based digestion. It enabled the identification and quantification of different metals present in samples.
3. X-Ray Diffraction Spectroscopy (XRD): XRD was demonstrated to determine the crystallographic structure of compounds. It provides insights into the arrangements of atoms within a substance, aiding in the identification of compounds.
4. Gel Documentation System (Gel Doc): The Gel Doc system demonstrated the visualization of DNA bands. It was used for imaging and documentation of DNA gel, allowing students to analyse the result of the DNA band.
5. Polymerase Chain Reaction (PCR): PCR, a widely used molecular biology technique, was demonstrated for the amplification of specific regions of DNA. It enabled the rapid production of multiple copies of specific DNA sequences.
6. Confocal Microscopy: The microscopy was demonstrated for the detection of plant pathogenic fungi (*Fusarium oxysporum*) root mandarin rot-causing fungi for the detection of spores and hyphae. Confocal Microscopy provides high-resolution, three-dimensional images, allowing students to study the morphology of fungi.

Overall, the instrument demonstration provided valuable exposure to advanced techniques and equipments used in Microbiology. It allowed the students to enhance their practical skills and deepen their understanding of various analytical methods used in these fields.



*Fig. 1. Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) facility room, Sikkim University*



*Fig. 2. Atomic Absorption Spectroscopy (AAS) facility room, Sikkim University*



*Fig.3. X-Ray Diffraction Spectroscopy (XRD) Facility room, Sikkim University*



*Fig.4. Confocal Microscopy facility, Sikkim University*



*Fig. 5. Demonstration of amplification of 16S rRNA region of DNA using PCR Machine*



*Fig. 6. Gel showing the targeted amplified product of 16S rRNA region under Gel Documentation System*