

MODERN INSTITUTE OF TECHNOLOGY, DHALWALA, RISHIKESH

BEST PRACTICES 2019-20

Best Practice 1

Title: Evaluating all the drinking water resources of the Institute for various physical, chemical and biological parameters for quality assessment by the Post graduate students of the Institute

Objective: To develop water testing skills in the students

Context: Regular Water quality monitoring is very important for any Institution

Practices: All the drinking water resources including underground water resource, municipality water supply and multiple water storage tanks in various departments of the Institute are collected in triplicates and checked for physical, chemical and biological factors to determine the water quality. **Physical properties of water** quality include temperature and turbidity. **Chemical characteristics** involve parameters such as pH, dissolved oxygen, chemical oxygen demand (COD). **Biological** indicators of **water** quality include biological oxygen demands (BOD) caused primarily by algae and phytoplankton. Another major property is the presence of coli-form bacterial population which is responsible for deterioration in quality of water. All these parameters are checked in the collected water samples using standard protocols in Chemistry and Biotechnology laboratories and their water qualities are determined

Evidences of the successes: Due to regular monitoring (quarterly), any change in physical, chemical and biological properties of water are timely assessed and resolved shortly. Water storage tanks were periodically cleaned with appropriate cleaning agents and this ensures that Institute is providing good quality water to its students/staff/visitors.

Problem Encountered and Resources required: sample collection bottles, specific chemicals, water quality testing kits, specific culture media, broth, petriplates, glasswares and incubator, laminar air flow, autoclave, oven etc.

Best practice 2

Title of the best practice 2: To develop bacterial consortium of potential bio-fertilizers.

Objective: To develop bio-fertilizer development skill in the students

Context: Department has developed bacterial consortium of potential bio-fertilizers as part of M.Sc. dissertation and lab exercises in Microbiology and Biotechnology which upon proper characterization could be of commercial importance to the farmers. This helps students understand the importance of lab practices in the development of products of commercial significance.

Practices:

Bacterial consortium having potential bio-fertilizer activities were isolated from the rhizospheric soil and root nodules of leguminous plants growing in the garden of the institution using standard pure culture techniques and specific culture media and characterized for nitrogen fixing ability, phosphate solubilization and auxin production in accordance with the standard methods.

Evidences of the successes: Pure cultures of bacteria isolated from rhizospheric soil and root nodules were tentatively characterized as belonging to the genus *Azotobacter*, *Azospirillum*, *Clostridium*, *Pseudomonas* and *Rhizobium* having

potential to act as biofertilizer with respect to improving nitrogen fixation, phosphate solubilization and Auxin production promoting plant growth.

Problem Encountered and Resources required: fungal contamination has been the most common problem which was overcome by repeated sterilization and prolonged sterilization time besides aseptic culture practices. Sample collection bottles, specific chemicals, specific culture media, broth, petriplates, glasswares and incubator, laminar air flow, autoclave, oven etc were the common resources required.