

AGRICULTURAL AND ENVIRONMENTAL MICROBIOLOGY

UNIT – I

Concepts of microbial ecology: Relationship between microorganism and different environments land, water and air. Microorganism inhabiting extreme environments. Microbiology of air – organisms in air, distribution and sources. Droplet nuclei, aerosol, assessment of air quality. Brief account of air borne transmission of harmful microbes.

UNIT – II

Types of aquatic ecosystems: fresh water – ponds, lakes, streams. Marine habitats – estuaries, mangroves, deepsea. Zonations – upwelling – eutrophication – food chain. Potability of water – microbial assessment of water quality – water purification – brief account of water – borne diseases.

UNIT – III

Types of wastes – characterization of solid and liquid wastes. Solid waste treatment – saccharification – gasification – composting, Utilization of solid wastes – food (SCP, mushroom, yeast); fuel (ethanol, methane, hydrogen); fertilizers (composting).

UNIT – IV

Liquid waste treatment. Treatment methods – primary –secondary (anaerobic – methanogenesis; aerobic- tricking activated sludge – oxidation pond – tertiary treatment. Utilization of liquid wastes – food (SCP, Yeast) – fuel (methane), fertilizers (Cyanobacteria).

UNIT – V

Biodeterioration: Deterioration of paper, leather, wood, textiles, metal corrosion, mode of deterioration, organisms involved, its disadvantages and mode of prevention.

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- Baker, W.C. and Herson, D.S.(1994). Bioremediation – McGraw Hill Inc., New York
Blackie.(1998). Plant Molecular Biology.(2nd edition).ChapmanHall,New York.
Burns, R.C. and Slater, J.H. (1982). Experimental Microbial Ecology – Blackwell Scientific Publications, Oxford, London.
Christon J.Hurst. (2002). Manual of Environmental Microbiology.(2nd edition).American Society for Microbiology,Washington.
Duncan Mara and Nigel Horen. (2003). The Handbook of water and waste water Microbiology. Academic press-An imprint of Elsevier.
Ec Eldowney, S., Hardman, D.J. and Waite, S. (1993). Pollution : Ecology and Biotreatment – Longman Scientific Technical
Gareth M. Evans and Judith C. Furlong. (2003). Environmental Biotechnology-Theory and Application, John Wiley and sons Ltd.
Marshall, K.C. (1985). Advances in Microbial Ecology. Vol-8. Plenum press.
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