Handbook on Organic Waste for Biological Treatment, Liquid Manure into a Solid, Tomato Waste Water Treatment, Oxalic Acid from Jute Stick, Cotton Processing Waste, Fish Waste, Agro-Industrial Wastes, Bioconversion of Pretreated Wheat Straw.....

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(Also Known as The Complete Book on Biological Waste Treatment and their Utilization)

Biological Treatment is the recycling of humus, nutrients and/or energy from biological waste by means of aerobic (composting) or anaerobic (digesting) processing. Biological treatment is an important and integral part of any wastewater treatment plant that treats wastewater from either municipality or industry having soluble organic impurities or a mix of the two types of wastewater sources. Biological wastewater treatment is an important and integral step of wastewater treatment system and it treats wastewater coming from either residential buildings or industries etc. It is often called as Secondary Treatment process which is used to remove any contaminants that left over after primary treatment.

Organic waste is material that is biodegradable and comes from either a plant or animal. Organic waste is usually broken down by other organisms over time and may also be referred to as wet waste. Most of the time, it's made up of vegetable and fruit debris, paper, bones and human waste which quickly disintegrate. Wastewater treatment is a process used to convert wastewater, which is water no longer needed or suitable for its most recent use, into an effluent that can be either returned to the water cycle with minimal environmental issues or reused.

Expenditure on water and wastewater infrastructure in India is set to increase by 83% over the next five years, hitting an annual run rate of $16 billion by 2020. The utility market is set to top $14 billion within five years, while annual spending in the industrial sector will approach $2 billion. Spending on water supply will grow from $5.56 billion to $9.4 billion over the next five years.

It will be a standard reference book for professionals, entrepreneurs, those studying and researching in this important area.

1. Organic Waste for Biological Treatment
Introduction, Physiological basis for Hazardous Organic Compound Degradation, Anaerobic Versus Aerobic Transformations, Examples of Hazardous Waste Amenable to Biological Treatment, Petroleum Components, Beta Oxidation, Aromatic Hydrocarbons, Halogenated Compounds, Halogenated Alkanes and Alkanoic Acids, Halogenated Aromatic and Polycydic Aromatic Compounds, Biodegradation by Mixed Populations, Conclusions

2. Organic Waste Forms and Treatment Strategies
Overview Of Biological Remediation And Waste Treatment Processes, In Situ Treatment, Bioreactor Designs, Examples of Biological Treatment Processes, Treatment of Liquid Wastes, In Situ Treatment for the Remediation of Surface and Groundwater, Bioreactor Treatment of Contaminated Water, Treatment off Solids, In Situ Treatment for the Remediation of Contaminated Soils, Soil Composting and Land Treatment, Bioreactors for the Treatment of Solids, Treatment of Gases, A Summary

3. Transformation of Liquid Manure into a Solid
Possible Processes for Manufacturing Solids from Wet Manure, Methodology of the Selected Process and Design of Plant, Tests of the Plant, Producing the mixture for composting, Producing the pellers, Composting, Drying, Qualities of the Product, Mechanical stability, Odour, Pathogen destruction, Fertiliser, Evaluation of the Process

4. Tomato Waste Water Treatment
Materials and Methods, Experimental cycle, Experimental apparatus, Results, Discussion, Cost Analysis, Conclusions

5. Oxalic Acid From Jute Stick
Methods , Alkali fusion, Nitric acid oxidation, Results and Discussion , Alkali fusion process, Nitric acid oxidation process, Effect of reaction time, Effect of temperature, Effect of catalyst concentration, Effect of nitric acid concentration, Nitric acid oxidation, Conclusions

6. Digestion of Cotton Processing Waste
Methods , Substrate, Analytical methods, Batch fermentation, Bench-scale studies, Experimental plant studies, Gas analysis, Results and Discussion

7. Properties of Sorghum Stalk
Nomenclature, Methods , Selection of materials, Harvesting schedule, Sample preparation, Measurement of physical properties, Strength characteristics of sorghum stalk, Compression strength, Tensile strength, Shear strength, Results and Discussion, Overall and internodal lengths, Moisture distribution, Solid density of stalk, Compressive strength, Tensile strength, Shear strength

8. Fermentation of Fish Waste
Methods, Fish, Sample preparation, Inoculum, Analytical methods, Microbiological examination, Statistical analysis, Experiment 1 , Experiment 2, Experiment 3, Experiment 4, Experiment 5, Results and Discussion

9. Agro-Industrial Wastes
Methods, Results and Discussion

10. Bioconversion of Pretreated Wheat Straw and Sunflower Stalks to Ethanol
Methods, Substrates, Enzyme, Substrate hydrolysis, Analytical methods, Ethanol assay, Ethanol production, Results and Discussion, Pretreatment of wheat straw, Pretreatment of sunflower stalks, Yeast fermentation

11. Modelling of Agricultural Waste Treatments
Chemical Reactor Theory, Microbial Kinetics, Model Implementation, Extension of the Previous Model to Digestion

12. Utilization of Waste of Dehydrated Onion
Methods, Isolation of Yeasts, Maintenance of strains, Preparation of onion juice from waste products of the dehydrated onion industry , Fermentation media, Tests of C and N sources, etc., Onion juice media, Analytical methods, Results and Discussion, Production of fodder yeast in a laboratory medium, Production of fodder yeast in an onion juice medium

13. Palm Oil Mill Effluent Disposal on Land
Methods and Results, Infiltration tests, Small-scale trials of the general effects of application of sludge (POMS) to land Trial1, Application to give Specfic Benefits to Land, Mulching effect (Trial 3), Restoring rintailings (Trial 4), Commercially Practical Methods and Optimum Input Rates for Application to Oil Palms, Preliminary trials, Long-term experiments
(Trial 7), Discussion

14. Studies on Beef-Cattle Manure Slurry
Model Development, Materials, Methods , Measurement of rheological properties, Apparatus and procedure, Results and Discussion, Temperature and total solids effect on limiting viscosity, ?0, Temperature and TS effect on K", Summary and Conclusions

15. Meat Meal and Algae for Calves
Methods , Results and Discussion, Performance of calves, Nutritive value of the ration

16. Manures and Sewage Sludges for Algal Growth
Materials and Methods, Collection and treatment of samples of sludge and manure, Analysis of the wastes, Preparation of media for cultivation of algae, Analysis of properties of waste extracts, Cultivation of algae in various media, Analysis of properties of waste-grown algae, Results, Properties of the wastes, Properties of the waste extracts, Growth rates of algae in various waste extracts, Oven-dried weight of harvested algae, Chlorophyll content of harvested algae, Heavy metal content of harvested algae, Discussion

17. Management and Treatment of Wastes from Large Piggeries
Typical Production Plant Layout and Sewerage, Wastewater Characteristics, Agricultural Applicability of Wastewaters, Wastewater Treatment for Stream Disposal, Efficiency of Wastewater Treatment, Primary treatment, Secondary treatment, Tertiary treatment, Economics of Treatment and Conclusions

18. Tower Digestion of Pig Waste
Methods, Equipment, Seed sludge, Pig manure, Tower operation, Analytical methods, Flocculant testing, Experimental design, Results and Discussion , Tower design changes, Flocculant testing, Tower performance, Flocculant effectiveness in the tower, Prospects for scale-up

19. Nutritive Value of Poultry Waste
Methods, Results and Discussion

20. Digestion of Rabbit and Pig Waste
Methods, Experimental design, Digesters, Substrates, Experimental procedure, Analytical methods, Results and Discussion , Energy production, Rabbit wastes, Mixed substrates: Pig manure and rabbit wastes, Pollution Control, Rabbit wastes, Discussion

21. Chemical Composition of Palm Oil Mill Effluent
Methods, Sampling, Fractionation procedure, Assays, Results and Discussion , Pome, Clarification sludge, Conclusions,

22. Humic Substances from Composed Barks
Methods, Organic fertilizers, Chemical analysis, Extraction of humic matter, Sephadex gel filtration, Results and Discussion, Organic carbon content, Extracting efficiencies of reagents, Influence of extracting solutions, Time of extraction and sample-to-solvent ratio, Number of extractions, Sample particle size

23. Humic Substances From Decomposing Bark
Methods, Raw materials, Chemical analysis, Humic materials, Results and Discussion, Spruce bark, Spruce bark plus hen manure (20%)

24. Particle Size and Tomato Waste Digestion
Experimental Procedures, Results and Discussion

25. Humic Acids on Hydrolysis of Potato Protein
Methods , Materials, Analysis, Experimental procedures, Results, Discussion

26. Effects of Composts on Wheat Yields
Materials and Methods, Results and Discussion, Composition of composts, Experiment 1. Evaluation of composts on an equal nitrogen basis, Experiment 2. Evaluation of composts when added at a flat rate of 5 t/ha in addition to NPK fertilizers

27. Production of Oxytetracycline
Methods, Maintenance of Streptomyces rimosus 12907, Vegetative medium, Fermentation medium, Production oj oxytetracycline in afermenter (1200 litre), Determination oj amino acids present in fermented mash, Anti-microbial spectrum of oxytetracycline present in the dry mash, Results and Discussion

28. Use of Manure in Fish Farming
Keeping Livestock in the Vicinity of Fish Ponds, Applying Manures to Fish Ponds, Adding Manures to Feeds, Economic Comparison of Feeding and Manuring, Modes of Action of Manure, Direct Consumption of Manure, Manure as a Fertiliser for Autotrophic Production

29. Bacteria in Swine Waste
Materials and Methods, Analytical techniques, Results , Identification, Effect of waste concentration, Effect of pH, Effect of sulfide concentration, Protein production and nutrient uptake, Discussion , Growth characterization, Protein production and treatment capacity, Integration with algal systems

30. Poultry Waste Water as Broiler Feeds
Results and Discussion

31. Utilization of Indian Wastes in Livestock Feeds
Prominence of Salseed Meal, Similarity of Oak Kernels and, Salseed Meal, Oak Kernels in

Poultry Mashes, Oak Kernels in Cattle Rations, Importance of a Negative Control in Experimental Designs, Rationing of Animals on the Minimum Adequate Requirement

32. Methane from Cattle Waste
Methods , Herd characteristics, Fermenter substrate, Fermenters, Experimental, Results, Discussion , Methane yield, Temperature effect

33. Treatment of Milking Parlour Wastewater
Methods, Pilot-scale reactor system description, Time allocation and operation of each phase of reactor, Analyses, Results and Discussion

34. Indicators of Pig Slurry Odours
Materials and Methods, Chemical analysis, Odour offensiveness test, Raw slurries of excreta, Treated slurries, Results and Discussion, Non-specific characteristics, Specific odourants, Prediction of odour offensiveness from chemical and biochemical characteristics, Conclusions

35. Pig Liquid Manure
Materials and Methods, Results, Discussion

36. UASB Treatment of Wastes
Introduction, Materials and Methods , Sampling and analysis, Seed sludge, Wastewater characteristics, The 30 m3 semi-technical experimental, pilot plant, RESULTS, Start up and operation, Loading rates and treatment efficiency, Sludge wash out, COD balance and sludge increment, Sludge retention and total methanogenic activity, Discussion, The performance of the reactor at an intermittent feeding, Performance at process temperatures of 20 °C and 30 °C, Sludge retention and sludge wash out, The rate of hydrolysis in the reactor

37. Digestion of Poultry Litter
Methods, Digester feedstock, Digester construction, Digester operation, Analytical methods, Data handling, Solids digestion, Results, Daily fed digesters, Batch digestion, Discussion, Daily fed digesters, Litter composition, Ammonium-N levels, Gas composition and biogas yields, Kinetic model, Batch digestion

38. Beef-Cattle Manure Slurries
Material, Methods, Apparatus, Computational procedure, Modified Reynolds Number, Results, Comparing capillary and rotational viscometer results, The f=NRe correlation for cattle manure slurries, Summary and Conclusions

About NIIR

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of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

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