

Nutrient sequestration from waste water and reuse

Dr. Shaon Ray Chaudhuri
Microbial Technology Group
West Bengal University of Technology

Technology Description

- Microbial biomass for sequestration of plant growth nutrients from waste water.
- Treats the waste water within 2 hours with associated COD and BOD reduction.
- Reuse of biomass as organic fertilizer for yield enhancement.
- Applied biomass prevents leaching of essential nutrients from soil into water bodies and makes them available in the root zone (upto 8cm depth below soil).
- Reuse of treated water for irrigation.

Value Proposition

- 120 times faster, STP/ETP size smaller, savings on land use.
- Little energy expenditure as compared to conventional treatment.
- Treated water suitable for recycling for non-potable purposes (industrial process, landscaping, agriculture, flushing of urinals etc.)
- Stable system requiring little maintenance.
- Accumulates essential nutrients from waste water and biomass functions as biofertilizer, leading to revenue generation.
- Bio-formulation prevents leaching of nutrients from soil, restricts to 8cm zone (root zone) - Environmental Protection

Criterion	Commercial Formulation	Bio-formulation
Retention time	10 - 13days	2 hours
Energy consumption	Heavy duty propeller & pumps	No energy (gravity flow)
Use of treated water	L, TF, CW, BC	A, L, TF, CW, BC
Biomass	Waste that needs disposal	Biofertilizer
% YI	Not used	10.21% increase
Advantages	WT, L, TF	WT, L, A, TF, F, EG, CE, PSG, CA.

A: agriculture, L: landscaping, WT: water treatment, TF: water for flush use, CW: Car washing, BC: basement cleaning, F: floriculture, EG: Employment generation, CE: Cooling effect, PSG: prevention from sun glare in high-rise, CA: cleaning air, %YI: % Yield increase in agriculture.

