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## **Dairy effluent conversion into biofertilizer using tailor-made microbial consortium: The waste to wealth approach**

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**Statement of the Problem:** Freshwater scarcity is a major global crisis that the world is facing and agriculture accounts for 80 to 89% of the daily usage. As per the UN report about 40% of the world population would be facing water stress by 2025. The objective of this study is to slow down this freshwater depletion by converting a nutrient-rich effluent (from dairy industry) selectively into liquid biofertilizer so that it could replace the use of fresh water as well as fertilizer during cultivation of pulses.

**Methodology:** Based on the dairy wastewater nature, a tailor-made bacterial consortium was developed using well-characterized microbes from the environmental origin which could selectively convert the nitrogenous and phosphatic pollutants into ammonia and phosphate-rich biofertilizer. The consortium was grown as biofilm in the reactor and in absence of any aeration, selectively converted the influent into plant growth nutrient-rich effluent.

**Findings:** The process required only 16 hours of incubation time as compared to the 105 hours in a conventional system. The energy requirement in the process is 1/10 while the space requirement for establishing effluent treatment plant is less than 25% of the conventional one. The biofertilizer could enhance production of mung bean 1.4 folds when compared to chemical fertilizer.

**Conclusion & Significance:** This is a technology which could make the dairy effluent treatment not only sustainable but also profitable while maintaining environmental health and agriculture.

### **Biography**

Shaon Ray Chaudhuri has graduated in 2001 from Calcutta University in Molecular Biology. She started working on culture-independent biodiversity screening and soon developed her own group which specializes in developing a microbial solution for wastewater treatment. She started her career as a faculty in 2004 in Department of Biotechnology, West Bengal University of Technology, India and moved to Department of Microbiology, Tripura (Central) University, India in 2015. She did her Post-doctoral training at Jadavpur University, India; Technical University of Munich, Germany; Humboldt University Berlin. Her group has been working in the area of Microbial Technology from 2004 onwards and has published 51 papers, filed 10 patents while transferred 5 technologies to industries. She has 4 international awarded patents. 9 students have graduated from her laboratory while 7 are working in the group.

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