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Title:	Integrated drip hydroponics-microbial fuel cell system for wastewater treatment and resource recovery
Authors:	Yadav, Ravi Kumar (/jspui/browse?type=author&value=Yadav%2C+Ravi+Kumar) Chiranjeevi, P. (/jspui/browse?type=author&value=Chiranjeevi%2C+P.) Sukrampal (/jspui/browse?type=author&value=Sukrampal) Patil, Sunil A. (/jspui/browse?type=author&value=Patil%2C+Sunil+A.)
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Abstract:	The development of low-cost, less energetically and chemically-intensive, and easy-to-operate technologies is desired for the efficient management of wastewaters at the point sources. In this context, we tested a novel integrated drip hydroponics-microbial fuel cell system design with domestic wastewater. It consisted of influent and effluent ducts along with ten reactor units. Each unit hosted the cocopeat bed matrix, a graphite electrode assembly, and a lemongrass sapling. After 3 h operation in a batch recirculation mode, the integrated system achieved $72 \pm 2.4\%$ COD, $83 \pm 1.1\%$ phosphate, and $35 \pm 4.2\%$ ammonia removal efficiencies. The efficiencies increased considerably after 12 h operation. It also yielded low levels of power output and plant biomass. The occurrence of various microbial and plant activities, along with adsorption and filtration processes, resulted in the efficient performance by the integrated system. The simple but efficient system design could offer an easy-to-implement approach for wastewater treatment at the household and small community levels.
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