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Bioelectrochemical approach for control of methane emission from wetlands

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Abstract

To harvest electricity and mitigate methane emissions from wetlands, a novel microbial fuel cell coupled constructed wetland (MFC-CW) was assembled with an anode placing in the rhizosphere and a cathode on the water surface. Plant-mediated methane accounted for 71-82% of the total methane fluxes. The bioanode served as an inexhaustible source of electron acceptors and resulted in reduced substantial methane emissions owing to electricigens outcompeting methanogens for carbon and electrons when substrate was deficient. However, when supplying sufficient organic carbon, both electricity and methane increased, indicating that electrogenesis and