

4A-107 Bio-prospecting and growth of macroalgae on anaerobic digestion piggery effluent (ADPE).

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Aims and Objectives

To evaluate the growth potential of several locally isolated macroalgae in ADPE under outdoor climatic conditions and investigate their nutrient removal rates and biochemical composition.

Key Findings

A consortium of two macroalgae, *Rhizoclonium* sp. and *Ulothrix* sp. were isolated and could efficiently grow in the ADPE with concentration of up to 248.4 mg NH₃. N L⁻¹. Macroalgal consortium growth could not be maintained at higher ADPE concentration. Maximum ammonium removal rate (30.6 ± 6.50 mg NH₄⁺-NL⁻¹d⁻¹) was achieved at ADPE concentration equivalent to 248.4 mgNH₄⁺-NL⁻¹. Mean biomass productivity of 31.1 ± 1.14 g AFDW m⁻²d⁻¹ was attained. Total carbohydrate and protein contents ranged between 42.8-54.8 and 43.4-45.0% (ash-free dry weight), respectively, while total lipid content was very low.

Application to Industry

The findings highlighted the potential use and promise of this *Rhizoclonium* sp. and *Ulothrix* sp. consortium for the bioremediation of ADPE and biomass production. To the best of the researcher's knowledge, this is the first study evaluating the potential of using macroalgae to treat ADPE. While there is a need for further optimisation, successful macroalgae growth on ADPE indicates the potential of using these organisms for not only treating ADPE but also as a potential source of animal feed or bioenergy (methane) production.