Enhancing CO_2 valorization from biomethane and digestate streams to produce alternative proteins from green microalgae cultivation.

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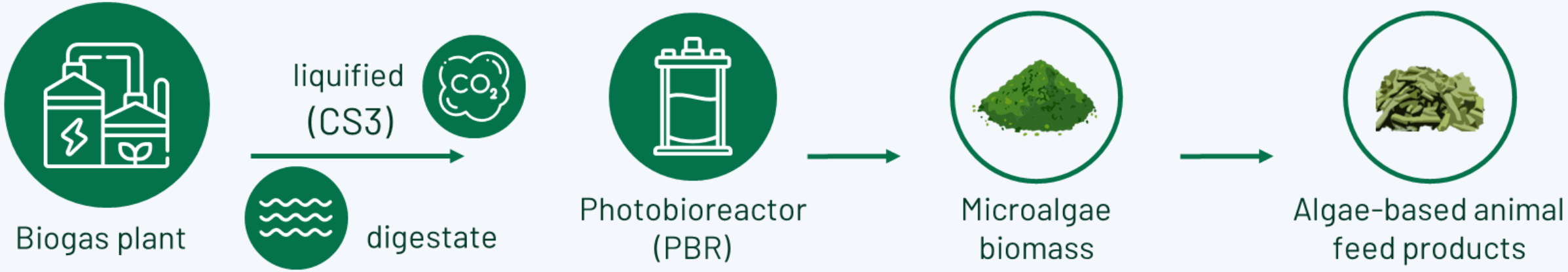
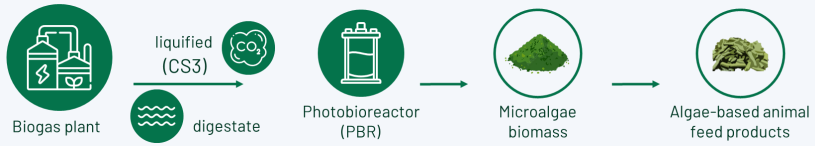
Background

Novel technologies for **CO_2 capture** and **digestate treatment** in biogas plants are necessary.

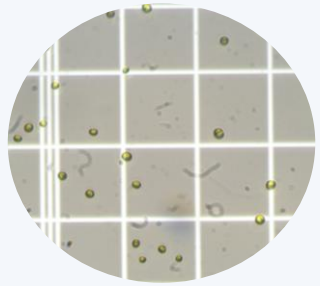


In the **SEMPRE-BIO project** (www.sempre-bio.com), microalgae cultivation is proposed.

Key idea



Pilot-scale tubular PBR (BETA Tech. Centre)



Parachlorella kessleri

Agri-food waste digestate

(N, P)

Liquified from biomethane streams

(C)

- **Feed** applications

Implications

- **Growth rate** (0.180 d^{-1}) and **protein content** (25 – 39 % DW) values in the range of previous lab-scale experiments.
- Operation with diluted digestate (4%), $N\text{-}NH_4$ concentrations (124 mg/L) were excessively high, due to continuous exposure.
- High **$N\text{-}NH_4$** concentration, unbalanced **N/P** ratios, and **solid** content are the main challenges to grow microalgae in digestate.

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