

## **MICROALGAE CULTIVATION ON ANAEROBIC DIGESTATE OF MUNICIPAL WASTEWATER, SEWAGE SLUDGE AND AGRO-WASTE**

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Microalgae are fast-growing photosynthetic organisms which have the potential to be exploited as an alternative source of liquid fuels to meet growing global energy demand. The cultivation of microalgae, however, still needs to be improved in order to reduce the cost of the biomass produced. Among the major costs encountered for algal cultivation are the costs for nutrients such as CO<sub>2</sub>, nitrogen and phosphorous. In this work, therefore, different microalgal strains were cultivated using as nutrient sources three different anaerobic digestates deriving from municipal wastewater, sewage sludge or agro-waste treatment plants. In particular, anaerobic digestates deriving from agro-waste or sewage sludge treatment induced a more than 300% increase in lipid production per volume in *Chlorella vulgaris* cultures grown in a closed photobioreactor, and a strong increase in carotenoid accumulation in different microalgae species. Conversely, a digestate originating from a pilot scale anaerobic upflow sludge blanket (UASB) was used to increase biomass production when added to an artificial nutrient-supplemented medium. The results herein demonstrate the possibility of improving biomass accumulation or lipid production using different anaerobic digestates.