

MICROALGAL CULTURES FOR GREEN CHEMISTRY, BIOENERGY PURPOSES AND PRODUCTION OF FOOD SUPPLEMENT

Innovations and Benefits - Simplified innovative systems for microalgae cultivation in the laboratory, outdoors and under greenhouse, in photobioreactors and protected tanks up to 1,500 L of useful volume. In addition to the use of recycled and / or low-cost containers, unconventional fertilizers and agitation systems are used, which are cheap and have low energy consumption.

Use - Production of algal biomass for energy purposes, green chemistry, nutraceuticals and restoration of cultural heritage.

Applications and ongoing Activities - Bioenergy: use of liquid digestate as a fertilizer for microalgae crops to be used for biogas production.

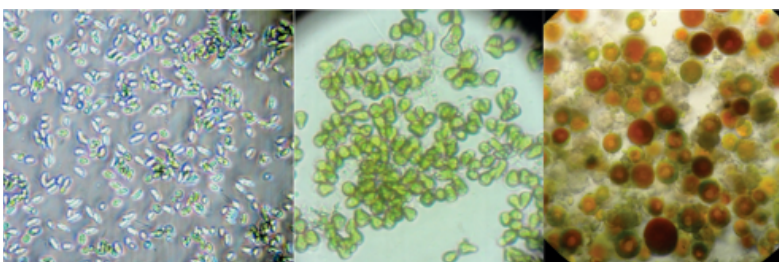
Green chemistry: experimentation of crops of *Botryococcus braunii* and *Dunaliella salina* for the production of oleic acid and 1,3 butadiene.

Nutraceuticals: production of *Arthrospira platensis* (spirulina) to be used as a food supplement or as a source of natural colorants (phycocyanins) for food and cosmetic products.

Restoration of cultural heritage: screening and evaluation of micro- and macroalgae for the production of polysaccharide-based extracts to be applied on paper artefacts (manuscripts, books, drawings) that have deteriorated or are at risk of deterioration.



Microalgal cultures in low-cost containers. From left: 2 L mineral water bottles, 20 L polyethylene photobioreactors, 1,500 L plastic sheet tank equipped with an air lift aerator / agitator with inclined plane



Optical microscope photos of three microalgae. From left: *Scendesmus dimorphus*, *Botryococcus braunii*, *Haematococcus pluvialis*

