ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

BIOMASS FEEDSTOCKS, ENVIRONMENT AND PLANT BIOTECH

Improvement, selection and cultivation of crops, microalgae and microorganisms and their use in different industrially and environmentally relevant fields.

The University of Bologna can offer multidisciplinary skills and expertise for research studies in the field. A particular focus is placed on applied innovative research aiming at sustainable energy, food and non-food applications.

The research of the University of Bologna covers a wide range of issues:

- Agronomy, physiology, biology and ecology of non-food lignocellulosic, oil and rubber crops, and agricultural residues
- Innovative and integrated cropping systems including perennial and annual lignocellulosic and oilseed crops
- Relationships between crop genotype and the expression of functional compounds in relation to applied agro-techniques and biophysical constraints
- Tools for genetic improvement and identification of molecular markers and genes for crop increased yield and tolerance to abiotic and biotic stresses, and for the planning and obtainment of new plant genotypes with improved characteristics
- Molecular and functional characterization of microorganisms and microbial communities involved in the biodegradation/transformation of organic pollutants in soil-water matrixes to develop strategies and processes of bioremediation
- Soil, sediment and water bioremediation processes in conventional, packed bed and bio-electrochemical bioreactors
- Characterization of microalgae and other microbial communities useful for phytoremediation. Study of the effect of exposition to pollutants and evaluation of physiological responses
- Physiological, biochemical and molecular responses to abiotic stresses of plants used in the phytoremediation of soils contaminated by heavy metals and organic pollutants.

HIGHLIGHTS

The University of Bologna contributes to the progress in biomass feedstocks, environment and plant biotech research taking part to several: WATERAGRI - Water retention and nutrient recycling in soils and streams for improved agricultural production; **INMARE** - Innovative screening and expression platforms to discover and use the functional marine enzymes for environmental cleanup applications; **MADFORWATER** - Integrated technological and management solutions for wastewater treatment and efficient reuse in agriculture environments of Mediterranean African Countries; **COSMOS** - Reducing the dependence of Europe's oleochemical industry on imported plant oils by turning camelina and crambe into profitable, sustainable, multipurpose, non-transgenic European oil crops.