could also be used unrestrictedly in order to obtain ecological products, even in agriculturally disadvantaged areas or in soils with nutrition deficiencies. The tomato production was directly influenced by the mixed treatment (radicular + foliar). The paper present, also, the results concerning the influence of the organic boron compounds on the soil heterotrophic bacteria, responsible for controlling the nutritive elements availability, influencing the soil composition and structure, playing an important role in soil process and determining plant productivity, the microbial community being considered an indicator of the soil sustainability for tomatoes plants. Nesporogene species, like *Pseudomonas* sp., *Arthrobacter globiformis*, *Arthrobacter citreus*, *Bacillus megaterium*, actinomycetes have been identified, with beneficial effect on biogeo-chemical circuits.

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Ammonium persulfate as useful oxidant in delignification processes of different raw materials

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The second generation of biofuels production is thought to use waste as raw materials, including grape stalks, depleted stalk sweet sorghum or wheat straw as biodegrading substrates. The structural carbohydrates in the plant cell wall are wrapped up in lignin and a very effective process has the aim to increase biomass digestibility and, in consequence, lignin removal. The objective of this study was to evaluate the delignification process of different lignocellulose feedstocks using ammonium persulfate as a new oxidation agent. The method consists in the treatment of lignocellulose material (biomass less than 2 mm in size), with diluted ammonium persulfate/NaOH in different experimental conditions: statically at room temperature, shaking at 30°C and autoclaving at 121°C. Our results showed that the best delignification yields were obtained in the following order: stalk sweet sorghum > wheat straw > grape stalks by shaking at 30°C. The results also prove that cellulose and hemicellulose materials were more effective in saccharification and lignin wastes enriched in ammonia salts can be used as substrates for different fermentative processes and applications. In conclusion, our new delignification method can be attractive in biofuel production.

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Assessing of benefits considered in cost–benefit analysis for energy and environmental biotechnology investment projects, financed by Structural Funds

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Cost–benefit analysis (CBA) represents the main financial tool used to form an documented opinion and for taking decisions regarding the financing of energy and environmental biotechnology investment projects from EU financial resources. The major advantage of cost–benefit analysis stems from its methodology that brings together, in a monetary form, costs and benefits of a project, regardless of the type of effects that are produces: non-monetary effects or significant macroeconomic effects.

In economic and financial sense we can define the term 'benefit' as an effect or result of desirable and measurable actions, investments, projects, resources or technologies, containing inclusively additional revenues, reduced costs and also social, positive and environmental externalities. The evaluation of the benefits is important to calculate specific indicators of financial analysis as well as economic analysis.

This thesis was performed in order to achieve a minimum set of benefits that should be considered when designing a CBA, including:

- Working principles regarding the use of revenues in financial analysis, the use of the benefits in economic analysis and the need to avoid double taxation of benefits.
- An algorithm for benefits calculating.
- Minimum benefits that must be included in cost–benefit analysis of energy and environmental biotechnology investment projects, financed by Structural Funds.

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An *in situ* assessment of key biomarkers in limpets exposed to sewage pollution

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When exposed to a contamination source, organisms may develop intrinsic mechanisms of resistance against the stress agent. *Patella depressa* is a marine gastropod inhabiting rocky shores, that by having reduced mobility and a relative large size, present great potential as bioindicator species in ecotoxicological testing, especially for *in situ* studies. This work aimed to assess the differences on biomarker levels as potential physiological adaptation of limpet populations with different life-story concerning exposure to a sewage effluent. Limpets were collected from three rocky beaches in Peniche, Portugal: one where a sewage treatment plant outfall

runs to, another site nearer, and another beach farther from the outfall. A beach with no expected influence from this source was used for acclimatization. Limpets were collected from the three sites and transferred to the acclimatization site. After 14 days, one-third of each population was transplanted onto the three study sites, implying that each site had limpets from the three sites. The organisms were left at the locations for 7 days and then collected. Limpets were frozen and stored upon: initial collection (T0d), after acclimatization (T14d), and after transplants (T21d), and cellular energy allocation, fatty acid profile, catalase, glutathione S-transferase, lipid peroxidation, and cholinesterase were measured. Results indicate that distinct populations possess different biomarker basal levels which are affected differentially by the surrounding contaminated/non-contaminated environment. This work provides insight on limpets' adaptation strategy dealing with a common pollution source, as well as information about the use of biomarkers as tools in natural populations risk assessment.

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Using manure in order to preserve and have sustainable management of the biodiversity of mountain grasslands from Dorna Basin

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The natural grasslands from Dorna Basin represent a true source of biodiversity and traditional culture which contribute to increasing the benefits provided by nature to society (ecosystem services).

Combining the traditional practices of using manure as fertilizer for the natural grasslands with scientific elements that will maximize the benefits of fertilization sustainable and preserve biodiversity represents the aim of this study. There were carried out field experiments, observations, analyses, and interpretations of results in five experimental batches: a control batch, two with unfermented manure administered in autumn/spring and two with fermented manure administered also in autumn/spring. There were made soil chemical analyzes and there were identified botanic species and their number for each lot, there were established the grass amount and there were made results interpretation.

We concluded that well fermented manure ensures the best fertilization, expressed in higher production/ha of natural grassland. Unfermented (green) manure contributes to maintaining grassland biodiversity, contributing even to their over seeding.

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Impact of the invasive macroalgae *Asparagopsis armata* on coastal environments: an ecotoxicological assessment

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The introduction of non-native species is recognized as one of the main threats to the oceans and the second cause of biodiversity loss. The marine red algae *Asparagopsis armata*, introduced into the Atlantic Ocean and Mediterranean Sea, spread throughout Europe in short time, colonizing a wide area with great success due to its opportunist strategy, lack of predators, and rapid growth rate. This invasive organism's production of potentially toxic large amounts of halogen may represent an additional danger to the ecological balance of the invaded community leading to a reduction in abundance of native species.

In this study, the potential impact of *A. armata* exudated compounds in the environment was simulated in a laboratory assay. The macroalgae, collected in Peniche – Portugal, were cultivated for different periods up to 12 hours and then the media was collected and filtered for further testing. The amphipod *Echinogammarus* sp. was then exposed to increasing dilutions of this seawater. At the end of the experiments, mortality was assessed and remaining animals were sacrificed and Acetylcholinesterase and the detoxifying enzyme Glutathione S-transferase activities measured. Moreover the impact of these exudates on a primary producer was assessed by exposing the green algae *Ulva* sp. and assessing its growth and color variation over a three-dimensional scale. Results show that *A. armata* exudates affect significantly both the marine crustacean model and the green algae. This demonstrates the real threat that this invasive species might represent on coastal environments tidal pools in a time time-frame equivalent to a tide.

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Characterization of activated carbon prepared from agricultural waste and its applications for decolorization of textile dyes

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The removal of textile dyes from waste effluents becomes environmentally important because even a small quantity of dye in water can be toxic and highly visible. The use of low-cost and eco-friendly adsorbents has been investigated as an ideal alternative to the current expensive methods of removing dyes from wastewater. Among various treatment technologies, adsorption onto activated carbon prepared from agricultural wastes has proven to be one of the most effective and reliable physicochemical treatment methods. In the present study, we aimed to investigate the characterization of activated carbon from an agricultural waste, corncob and its application for the decolorization of textile dyes. The activated carbon from corncobs (CCAC) was prepared with $ZnCl_2$ at impregnation ratio, corncobs:$ZnCl_2$, 1:3. Then, the impregnated corncobs were carbonized in furnace at 700°C. The chemical and physical properties of CCAC were examined by XRD, FTIR, SEM, BET. Three different textile dyes (Astrazon Blue FGRL, Red FBL and Telon Blue AGLF) were selected for the decolorization study. Each dye was incubated with CCAC at varying pH values 3.0–5.0. The decolorization percentage was calculated by taking untreated dye solution as control (100%). The results showed that CCAC was pre-