

## ***EDITORIAL COMMENT***

Dear readers,

In the second English language issue of the journal for 2021 you will have the opportunities to enjoy the thematic richness of published articles and to learn new scientific facts achievements. In total, nine articles within the scope of seven thematic rubrics are included: *Man and Biosphere*, *Bioautomatics and Bioinformatics*, *Forest Ecology and Biology*, *Environmental Biotechnology*, *Space Technology and Environmental Monitoring*, *Radiation Ecology*, *Ecological and Sustainable Agriculture*.

It is well known that the increasing society demand for healthier and natural drinks is oriented towards functional beverages containing viable probiotic bacteria and improved sensorial characteristics. In a large scale fermentation assay (*Man and Biosphere* rubric) the dynamics of pH, concentration of viable cells, phenolic compounds and antioxidant activity are evaluated. All parameters are reliable basis for modeling of lactic acids fermentation with addition of mint essential oil for the production of functional wort-based beverages.

In the rubric *Bioautomatics and Bioinformatics* a mini-review is presented dedicated to the main scientific achievements in the field of anaerobic digestion control. Authors are from three leading teams from France, China and Bulgaria. As a pioneering research on the so cold Extremum Seeking Control for anaerobic digestion process with production of hydrogen and methane it reveals sophisticated control algorithms of this biotechnological process. A second study is focused on the improvement of biogas production in the anaerobic digestion process by Sliding Mode Control. In addition, different simulations and comparisons are presented and interpreted with satisfactory results.

The continuing climatic anomalies and changes impose new responsibilities and new solutions for the management and use of forests. In the rubric *Forest Ecology and Biology* a constructive analysis of fire safety, material and financial losses, and the social impact based on literature sources and monthly data on the distribution of forest fires are presented – in total for 499 registered fires in the forest territories of Bulgaria for 2020.

In the rubric *Environmental Biotechnology* an experimental estimation of industrial material flow produced by „Devnya Cement“AD for remediation of acid spills is well described. It's about the product “Restart”, which is an integral part of the production process in the installation for the production of cement clinker by dry method and contains a high amount of calcium oxide (lime material). This product is proved as a possible and suitable ameliorant for improving the unfavorable properties of acid soils.

Very curious and fascinating are the scientific achievements of the Space Research and Technology Institute at the Bulgarian Academy of Sciences. There are considered many scientific programs actively supported by the Bulgarian scientists. For the period 2018-2021, the Institute has developed more than 130 projects, many of them with external non-budgetary funding. The main research activities and achievements are in the field of the space physics, remote sensing of the Earth and planets, and transfer of space technology. The perspective directions for work and their applications are presented too. In the same rubric, *Space Technology and Environmental Monitoring*, original data on the possibilities and potential of aerospace data obtained by different methods for processing, interpretation, visualization and monitoring of a landfill for household waste in Burgas are presented. The optical images of the multispectral instrument of the Sentinel 2 satellite and SAR radar data from the Sentinel 1 satellite of the Copernicus program of the European Space Agency allow quantitative assessment for the examined

site, as well as monitoring of the landfill for municipal waste, thus making possible to monitor thermal pollution and take measures to stop its spreading.

In the new rubric *Radiation Ecology* a leading project of the Institute for Nuclear Research and Nuclear Energy at the Bulgarian Academy of Sciences is presented, namely the construction of new cyclotron centre. Being on a design level, an important task is the radiation shielding assessment of the facility. The results of two irradiation scenarios (during a session for production of  $^{18}\text{F}$  and after the end of bombardment) and the distribution of the radiation fields at three cooling times in the second scenario are well documented and discussed.

The problems and perspectives in organic cultivation of cereals are overviewed after analyzing the literature (articles, reports and materials dealing with organic farming of livestock waste compost) in the period 1970 to 2021. Different key points like organic farming and cultivation of cereals, maintenance of soil fertility and the application of reduced tillage, compilation of correct crop rotations, use of suitable varieties for organic cultivation of cereals, use of different sowing norms in organic cultivation of cereals, yields in organic cultivation of cereals, and protection against GMO contamination are analyzed in the light of the concept and basic principles of the *Ecological and Sustainable Agriculture*.

Dear readers, all we hope that the diverse rubrics of this issue will give you real pleasure and will provoke your scientific interests to many topical issues for the society and the environment.

Enjoy reading!

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Sofia

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