

EDITORIAL COMMENT

Dear Reader,

In the recent issue I am pleased to present the members of the Editorial Board of your favourite and preferred journal, which has already been printed and available in English. With their competence and constant striving to present the latest developments in the field of ecology and environmental engineering they make a great contribution to the continuous improvement of the quality and style of this one-of-a-kind magazine in Bulgaria. Years of experience and proven expertise in various fields like microbial ecology, biofuels, microbial water and soil treatment technologies, environmental biotechnology, bioaccumulation and biodegradation of pollutants (heavy metals, pesticides, petroleum products, industrial and agricultural waste), microbial physiology and pathogenesis, extremophiles, probiotics, forestry, forest plantations, bioprocess engineering, aerospace control systems, remote sensing, ecological monitoring, space technology, biogas technologies, non-traditional energy conversion, energy efficiency, etc. allow authors and editors to privately leave feedback and discuss what needs to be changed before publication contributing to improvement the quality of the accepted manuscript. In conclusion, the Editorial Board endeavors to expand and deepen the links between research groups and research organizations, and is responsible for strengthening the rating of the journal on the base of raising criteria and requirements for submitted publications and providing scientific benefits for the readers interested in all journal covered topics.

The content of the first for 2018 English language edition of the journal includes articles grouped into three main sections – *Technologies for depolution, Ecological and sustainable agriculture, and Agroecology*.

It is well known that long terms of the planned space expeditions require the creation of the most closed life support system of crews in spacecraft with cyclic regeneration of substances in an artificial ecosystem. In a large scale study the capacity of *Trihoderma viridae* culture (isolated from the internal environment of the International Space Station) to utilize cellulose-containing substrates under mesophilic conditions has been evaluated. Under conditions of space flight, the culture of *Trihoderma viridae* reduced the total concentration of volatile organic impurities remaining after the biodegradation of gauze from 34 mg/m³ to 5 mg/m³. The number of detectable volatile compounds decreased almost twice. The carried out microbiological and biochemical experiments have shown that the post-cleaning of liquid products of hydrolysis of gauze fabric with the help of cellulolytic fungi can be an effective component of utilization of cosmonaut hygiene items with the help of microbial communities in space flight conditions. Additionally the possibility of applying anaerobic digestion for reduction and stabilization of the organic fraction of solid wastes generated during piloted spacecraft flights is discussed.

In the same section (*Technologies for depolution*) the reader can to acquaint with the development of method for thermodynamic prediction algorithm aiming to create new universal environmental biotechnologies. Distinctive features of biotechnologies are targeted to the limitation of environmental pollution with a wide range of toxicants and transform them into commercially valuable products. Obtained engineering and technological parameters of universal biotechnologies indicate the prospects of their large-scale industrial implementation.

An important activity not only in terms of copper waste treatment, but also to extract valuable components and energy savings is the recycling of electronic waste. Biotechnological methods for extracting metals from secondary sources of raw materials does not require the incorporation of large amounts of energy to ensure the high temperatures and generate relatively small amounts of waste which are non-toxic. Mainly involved in these processes are bacteria from the genus *Acidithiobacillus* - species *Acidithiobacillus ferrooxidans* and *Acidithiobacillus thiooxidans*. Implementing *Acidithiobacillus ferrooxidans* in consecutive experiments with two media and various concentrations of copper ions the authors made conclusion that the biofilm is more effective than suspended cells for industrial biotechnological processes in presence of copper ions and high concentrations of ferrous ions.

Actual ecoethic problems related with salinization of plain soils in Azerbaijan Republic are discussed in the section *Ecological and sustainable agriculture*. A detailed analysis of the distribution and status of salt soils, as well as a comprehensive assessment of the irrigated soils in Azerbaijan, has been made in the article.

The reported practical approach consists of wash technology for removal the salts from soil where plant roots spread – approximately this layer implies one meter upper layer of the soil. Because, most of the agricultural crops or their root systems are in whole or partially spread under one meter this layer is called a reporting layer. Light and medium mechanical composition soils are easy to clean as their water-leakage ability is great but for others soils the presented way of washing should continues up to reaching the required report norm. As a continuation of this section the natural resources are interpret as elements of the environment which, at a certain stage of economic development, can be used as a means of production, including the creation of composting materials for sustainable agriculture. On the basis of the chemical and agrochemical characteristics of the starting materials (vermiculites, glauconite, straw fly ash, wood biomass and pig manure), 5 compost samples have been prepared from mixing the natural products in a different ratio. The analyzes of the five starting products found, that in vermiculites, glauconite and ash from straw the total amounts of the biogenic element nitrogen and the sum of the mineral fractions of nitrogen (ammonia and nitrate) are very small, whereas for wood biomass and pigs manure the content of the total N is high. The content of the tested heavy metals is much lower, than the ones defined in the legislation. It should be concluded that the five composts represent a qualitative improver for application in agricultural practice.

The third article in this section highlights the importance of soil properties for the sustainable development and productivity of suburban green areas. Moreover, soil characteristics are determined as important factors not only for the existence and normal functioning of ecosystems but allowing suitable planned activities to ensure efficient and environmentally use. Herewith, the results of an investigation on Fluvisols located in “Kriva Bara” Sofia, Bulgaria are presented. It is found that some physical and chemical soil characteristics, such as soil texture, porosity and total Kjeldahl nitrogen, changed strongly with soil depth, either negatively or positively, while such relationships were moderately expressed or statistically insignificant in the case of other soil characteristics, such as soil reaction (pH), CaCO₃, salt content.

In the last section *Agroecology* the attention of the reader is directed to utilization of available information and computer systems to determine the necessary irrigation time and quantity norms to obtain optimal actually possible yields of agricultural crops. An automated system for prognosis and management of irrigation regime based on the two basic natural factors influencing the agriculture, namely the solar radiation and the soil-physical properties of the soil types is developed. In parallel, the basic models of dependencies that make up the algorithms of the system are presented too.

Last but not least I would like to announce the coming XII National Scientific Conference with International Participation ECOLOGY AND HEALTH 2018! This bi-annual scientific event, carried out in Plovdiv (Bulgaria) – 7-9 June will provide great opportunities for presentation the latest developments in the areas of agriculture, food and food technologies, medicine, urbanization and environment, ecology and biotechnology, microbial and plant biotechnologies and space ecomonitoring. We will be happy to be together, to discuss the results achieved, to find new perspectives and to launch new scientific projects and partnerships!

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Sofia

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