

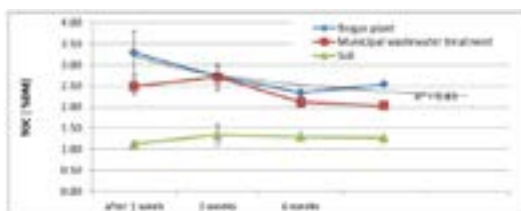
6th World Conference on Climate Change

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Carbon sequestration in the soil fertilized with digestate as a method of mitigating the CO₂ emissions

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The currently observed increase of the CO₂ concentration in the atmosphere contributes to the global warming. Carbon sequestration is one of the ways to mitigate the CO₂ emissions to the atmosphere. Soil can play a significant role in carbon retention and reduction of the greenhouse effect. On the other hand, soils especially degraded ones and that used as agricultural land require fertilization. One of the method of improving the fertility of the soils involves using the organic waste, which can be a valuable source of nutrients and has a positive effect on the physical and physicochemical properties of soils. The effect of digestate properties on carbon fate in soil were the aim of the study. The pot experiment with using slightly acid soil (pH 5.6) and two types of digestates: (a) from the biogas plant and (2) the anaerobically stabilized sewage sludge from a municipal wastewater treatment plant were conducted. The digestates were added to the soil in doses that increase the initial carbon concentration to 2% dry weight, and the pots which included the soil-waste mixtures and soil alone (as control sample) were incubated at 20°C for 60 days in thermostated chamber. During the experiment the soil samples (in three repetitions) were taken four times, after the 1st, 3rd, 6th and 9th week. The significant decrease of organic carbon content were observed until the 6th week, and then the carbon content was stabilized. In the soil without amendments, the content of organic carbon did not change significantly.



Recent Publications

1. Borowski G., Stepniewski W., Wójcik Oliveira K. 2017. Effect of starch binder for properties of charcoal briquettes, International Agrophysics, Vol. 31, Issue 4, 571-574.
2. M., G. Niedbała, M. Adamski, M. Czechlowski, T. Wojciechowski, A. Czechowska-Kosacka, K. Wójcik-Oliveira, 2018. Modeling Methods and Predicting Potato Yield - Examples and Possibilities of Application, Journal of Research and Applications in Agricultural Engineering, Vol. 63(4).
3. Kujawska J., Wójcik-Oliveira K, Effect of vermicomposting on concentration of heavy metals in soil with drill cuttings, Journal of Ecological Engineering, vol. 20, issue 7, 2018.
4. Wójcik Oliveira K. and Niedbała G., Mitigation of greenhouse gases emissions impact and their influence on terrestrial ecosystem, IOP CONFERENCE SERIES: EARTH AND ENVIRONMENTAL SCIENCE (EES), ISSN: 1755-1315, w: Earth and Environmental Science, 8th International Conference on Future Environment and Energy (ICFEE 2018), Phuket, Thailand, January 10-12, 2018, s.151-155.

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5. Pawłowski L., Cel W. and Wójcik-Oliveira K., Sustainability aspects of biofuel production, IOP CONFERENCE SERIES: EARTH AND ENVIRONMENTAL SCIENCE (EES), ISSN: 1755-1315, w: Earth and Environmental Science, 8th International Conference on Future Environment and Energy (ICFEE 2018), Phuket, Thailand, January 10-12, 2018, s.190-195

Biography

Katarzyna Wójcik Oliveira is a PhD student at Faculty of Environmental Engineering of Lublin University of Technology. She graduated from Environmental Protection at Lublin University of Life Science and from Soil Science at UNESP, Brazil. Her areas of interest include global warming, Earth science, climate change, CO₂ capture and sequestration. The goal of her research is to study the impact of environmental factors on retention and transformations of carbon in the soils fertilized with post-fermentation waste.

Notes: