

THE INFLUENCE OF CITY SLUDGE FERTILIZATION UPON SOIL RESPIRATION WITH WITH ALFALFA, AT BOLDUȚ (CLUJ COUNTY)

Roxana VIDICAN¹, Iancu PINTEA¹, Ioan ROTAR¹, Florin PACURAR¹, Valentina SANDOR¹

e-mail: roxana.vidican@usamvcluj.ro

Abstract

In the context of global climate change and the different scenarios developed in this direction, quantifying soil respiration becomes an issue of major interest for both researchers and farmers. The objective of this study is to assess the use of city sludge as fertilizer in agriculture, with special reference to soil respiration with alfalfa grown on in terms of ensuring environmental protection and the integrity of human health. Number of soil microorganisms and their composition is an important practical point in assessing biological activity. The effect of fertilization with city sludge upon soil respiration on alfalfa culture was studied in an experiment with 8 variants where were applied different doses of city sludge and manure. Soil respiration is closely related to microbiological activity in soil. Determination of soil respiration allows obtaining and processing for a large number of data which will provide greater accuracy in estimating soil CO₂ flux. Results show that the activity of soil microorganisms is much stronger in July than in October. In July, the biggest differences from the control, in terms of soil respiration were recorded in variants fertilized with 40, 60 t / ha city sludge and 20 t / ha manure, which is 0.69; 0.52 and 0.24 are noted in statistically highly significant. The best results in terms of soil respiration were recorded in October of 2011 in the variant treated with 40 t / ha city sludge with a value of g/m²/h 2.78 and with a 0.66 g/m²/ h difference to the version control.

Keywords: city sludge, soil respiration, alfalfa, environmental protection.
