

USE OF DIGESTATE FOR PLANT FERTILIZATION - INFLUENCE ON SOIL AND PLANT QUALITY AND GHG EMISSIONS

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Climate change is one of the most important issues of our time. Recently, we are facing the consequences of human activity as we select various anomalous phenomena such as hurricanes, rain, drought, etc. Addressing these challenges requires an assessment of all areas contributing to climate change and measures to mitigate it. Lithuania is one of the countries with the highest greenhouse gas (GHG) emissions from the transport and agricultural sectors. However, direct GHG emissions are only one of the problems. Soil quality, organic matter accumulation and soil degradation are also very important when assessing the impact of agriculture on climate change. The addition of organic agricultural waste to soil plays an important role in combating environmental pollution from agricultural waste, also addressing the energy crisis and responding to global climate change. However, information on the impact of different agricultural organic wastes on soil, plant quality and GHG emissions is limited.

The aim is to compare the influence of fertilization of different digestate manures and mineral nitrogen fertilizers on soil and plant quality and GHG emissions from the soil. The digestate used in the experiment is under the anaerobic conditions in biogas plant and contains organic and mineral nutrients that are necessary and important for plant growth. The experiment was carried out at a laboratory scale. Wheat were cultivated in pots filled with two different soil types and fertilized with eight treatments of mineral and organic (digestate) fertilizer in three replicates. Plants were grown in climatic chambers (Climacell CLC-707-TV) at a temperature of 8 hours 10°C and 16 hours – 18°C, a humidity of 65%. GHG emissions will be determined using hoods and the gas collected will be analyzed by gas chromatography.

The results of the study will determine which organic matter in the soil releases the least GHG emissions and has lower contribution to environmental pollution.