O 4. CLIMATE CHANGE EFFECT ON MICROBIOME OF TERRESTRIAL ECOSYSTEMS

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ABSTRACT: Climate change has a deep impact on terrestrial ecosystems. Important parameters of the soil microbiome are the number and functional diversity of microorganisms, soil respiration (CO2 emission) and enzymatic activity. Well known that more than 1 billion tones of carbon are added to the atmosphere each year trough change of land use. The purpose of our studies was to investigate the dynamics of CO2 emission from soils of agrogenic, postagrogenic and natural ecosystems and they soil microbiome for 10 years. Monitoring studies of the emission of carbon dioxide from soddy-podzolic soils and analysis of soil microbiome were conducted from 2008 to 2018 in dynamics. It has been established that over the past 10 years, the number of antibiotic-resistant bacteria has increased by 32,7% in natural ecosystems and by 78,2% in the transformed terrestrial ecosystems. Were isolated 624 dominant bacteria, among them 268 antibiotic-resistant bacteria. All isolates were multi-drug resistant, of which greater than 81,4% were resistant to 9 antibiotics. The maximum level of intensity of carbon dioxide emissions from soils of the studied ecosystems was fixed from the beginning of May to the end of June, due to a favorable combination of abiotic factors for the activity of the soil microbiota. The amount of carbon dioxide produced by virgin soddy-podzolic soils averaged - 83.51 (mg CO2 / kg soil / day); postagrogenic - 68.35 (mg CO2 / kg soil / day); agrogenic - 50.33 (mg CO2 / kg soil / day). In general, carbon dioxide emissions from soil for 10 years have increased by 27.8%. Global warming causes significant changes in the structure and functions of soil microbiome.

Keywords: Soil, ecosystem, climate change, microbiome